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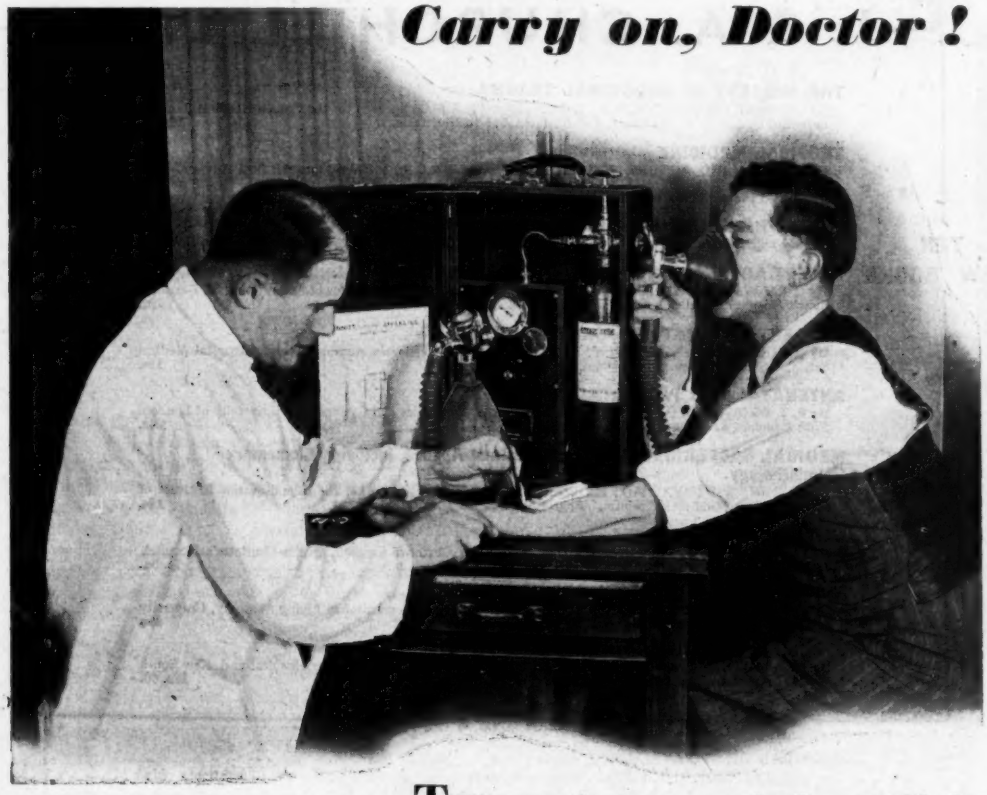

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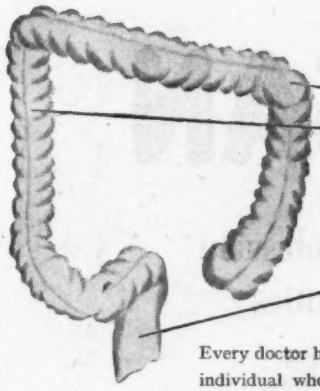

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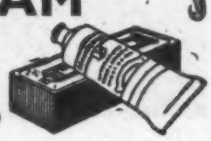

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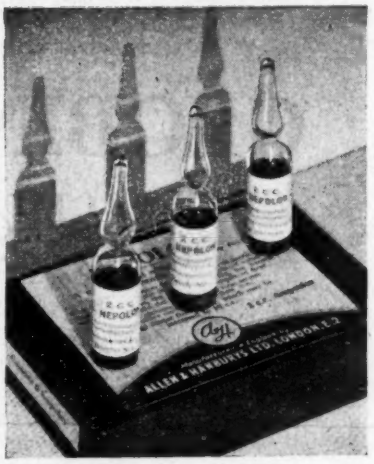

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HEPATITIS AFTER YELLOW FEVER INOCULATION

RELATION TO INFECTIVE HEPATITIS

G. M. FINDLAY, C B E, M D, D SC EDIN., M R C P
BRIGADIER

N. H. MARTIN
B M OXFD, M R C P, F R I C
MAJOR RAMC

J. B. MITCHELL
M B LOND., M R C S
CAPTAIN RAMC

I. CLINICAL AND PATHOLOGICAL FINDINGS

INSTANCES of jaundice following inoculation with yellow fever vaccine were first observed in 1934. It was then thought that the jaundice was fortuitous, the persons attacked having contracted infective hepatitis, which was known to be widely distributed in Africa. Normal human serum was being used at the time as a vehicle during desiccation for the neurotropic strain of yellow fever virus then employed as a vaccine; in addition, 0·5 ml. per kg. body-weight of human yellow fever immune serum was injected into the subject at the same time as the vaccine. In 1936 and 1937, when using the attenuated pantropic yellow fever virus strain 17D, with and without additional injections of human immune serum, further instances of jaundice occurred. The cases became so numerous that they could no longer be considered fortuitous.

In a series of communications (Findlay and MacCallum 1937, 1938, Findlay, MacCallum and Murgatroyd 1939)* it was demonstrated that the icterogenic agent bore no relation to the strain of yellow fever virus used, and that it was derived from the human serum used as a vehicle in the preparation of the vaccine. It was further shown that the agent had many of the properties of a virus, though attempts at animal passage failed and no characteristic lesions could be produced on the chorio-allantoic membrane of the developing chick embryo.

Similar outbreaks following prophylactic inoculation against yellow fever were recorded by Soper and Smith (1938) and by Fox and others (1942) in Brazil, and among the armed forces of the United States (*J. Amer. med. Ass.* 1942, **120**, 51) where no less than 28,585 cases were reported.

From 1937 to 1940, Findlay and MacCallum in England had been storing all human serum for a month before use, rejecting any from donors who during that period showed any sign of ill health; further, immediately before use, the human serum was heated to 56° C. for 30 minutes and filtered through a Seitz filter. At this time virus 17D was being grown in a human serum—Tyrode medium

TABLE I—INCIDENCE INFECTIVE HEPATITIS AND POST-INOCULATION JAUNDICE IN EUROPEANS

Year and month	Cases of infective hepatitis	Cases of postinoc. jaundice	Year and month	Cases of infective hepatitis	Cases of postinoc. jaundice
1941			1942 (*cont.*)		
Aug.	5	..	Sept.	19	..
Sept.	3	..	Oct.	3	..
Oct.	3	..	Nov.	4	..
Nov.	3	..	Dec.	11	17
Dec.	3	..	1943		
1942			Jan.	7	200
Jan.	3	..	Feb.	14	163
Feb.	4	..	Mar.	13	178
Mar.	7	..	Apr.	12	106
Apr.	6	..	May	14	18
May	3	..	June	8	6
June	6	..	July	10	1
July	9	..	Aug.	5	..
Aug.	14	..	Sept.	6	..
	Total	.. .. ..		195	689

containing minced chick embryo. Four thousand prophylactic inoculations were given in this period without incident. The yellow fever vaccine involved in the present outbreak was prepared by injecting developing chick embryos, in vivo, with virus 17D, the infected material therefrom being suspended in human serum as a vehicle during desiccation.

Apart from these four outbreaks following inoculation of yellow fever vaccine prepared with human serum, other outbreaks of jaundice have followed the parenteral injection of presumed normal human blood, plasma or serum. Further details of these outbreaks may be obtained from papers on jaundice associated with

(*a*) glycerinated humanised lymph (Lurman 1885);
(*b*) measles immune serum (McNalty 1938, Propert 1938, Johnson Jervis 1940, Ministry of Health 1943);
(*c*) mumps immune serum (Ministry of Health 1943);
(*d*) transfusion of normal whole blood, plasma and serum (Ministry of Health 1943, Beeson 1943, Morgan and Williamson 1943).

Present Outbreak

The trend of the present war necessitated the presence in endemic yellow fever zones in Africa of considerable numbers of Europeans as well as of Africans serving

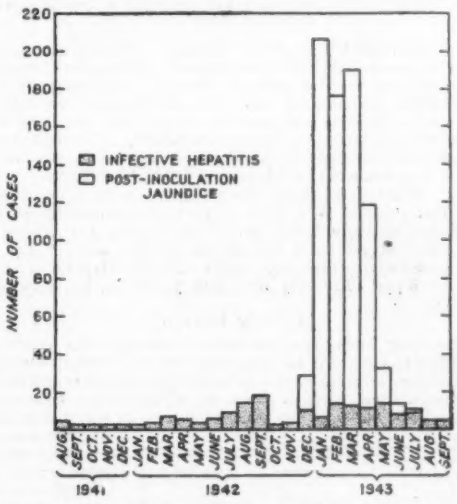
NUMBER OF CASES
INFECTIVE HEPATITIS
POST-INOCULATION JAUNDICE
AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT
1941
1942
1943

Fig. 1—Incidence of infective hepatitis and postinoculation jaundice from August, 1941, to August, 1943.

outside their country of origin. It was therefore important to detect any case of yellow fever at the earliest moment, for, even though wholesale prophylactic inoculation had largely allayed anxiety, there was always the hazard in dealing with large numbers that a few might have escaped immunisation. Ever since Gouy's observations in 1874 the difficulties of differentiating yellow fever from other jaundice-producing diseases have been well recognised. In this command, therefore, every case of jaundice in military personnel has been notified whatever the presumed cause. It has thus been possible to get an idea of the incidence of infective hepatitis month by month. From August, 1941, until September, 1943 (see fig. 1 and table I), among Europeans only 195 cases had occurred, the monthly incidence being low except in August and September, 1942, when 14 and 19 cases were recorded as the result of an outbreak in a particular area, and again from February to May, 1943, when 14, 13, 12 and 14 cases per month were reported. Late in December, 1942, the notifications for jaundice began to rise rapidly, and it was noted as possibly insignificant that many of those suffering from jaundice had been inoculated against yellow fever at the same times and places. As the notifications continued to increase in January, it was found that the cases followed injection of particular batches of yellow fever vaccine used between Sept. 19 and Dec. 31, 1942, though in one instance there is reason to believe that an icterogenic vaccine was used in February, 1943. The main fury of the outbreak was spent by the end of April, 1943, and the last attributable notification was received in the beginning of July.

In all, 689 cases were recorded as being due to yellow fever vaccine inoculations, this total comprising Army, Air Force and Naval personnel, with a few civilians. The numbers refer only to those cases occurring in West

* References will be found at the end of part 2.

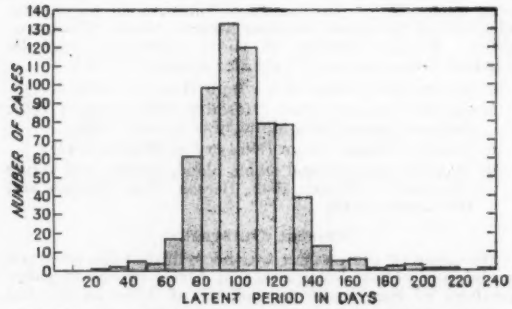

Fig. 2—Latent period from yellow fever inoculation to first symptoms of hepatitis in 670 cases.

Africa, though we know of 15 other persons inoculated with the same batches of vaccine who developed jaundice while serving in other areas in Africa. The total number of persons inoculated with the icterogenic vaccine is not known, so it is not possible to calculate the incidence of jaundice relative to the total numbers. Fox and others (1942) in Brazil, for one batch of icterogenic vaccine used, found a calculated incidence of 7·66% developing jaundice. Isolated small groups which we have been able to examine suggest that in this West African outbreak the incidence was much higher. Thus in one unit where 61 persons had all been inoculated at the same time, 45 developed symptoms suggestive of hepatitis, and of these 38 developed clinically manifest jaundice, an incidence of 62%.

LATENT PERIOD

The long latent period which precedes the onset of jaundice in these outbreaks, as in the outbreaks following administration of measles immune serum and other blood products, has always been a matter for comment. Among 670 cases in the present series, in which the date of commencement of symptoms could be recorded accurately, the average latent period was 101·5 days, the shortest period being 26 days and the longest 239 days (fig. 2). The significance of latent periods of 200 days and over is open to question because of the presence of infective hepatitis in the population. This variation in latent period was observed in earlier outbreaks. Findlay and others (1939) found a latent period of from 35 days to 7½ months. Fox and others (1942), for two batches of vaccine, gave average periods of 124·6 and 142·8 days, cases occurring as early as 14 days after inoculation. The length and variation of the latent period has sometimes been cited as an argument against a virus being the causal agent in postinoculation jaundice. It must be remembered, however, that some well-established virus infections have long and variable latent periods: thus several cases of rabies have been reported as occurring more than 12 months after the initial exposure (Stuart and Krikorian 1932, Hajare 1933, Iyengar 1933), though the usual incubation period is 3–6 weeks.

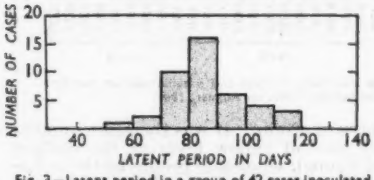

Fig. 3—Latent period in a group of 42 cases inoculated at the same time and place.

Variations in latent periods might be explained by a difference in the amount of icterogenic agent in different batches, or by the individual susceptibility of the subject. In a group of 42 officers and men inoculated at the same time and place, the latent period varied from 58 to 118 days with a mean of 86 days (fig. 3). Further, 17 officers and men inoculated at the same time and place as the person with the longest latent period (239 days) had an average latent period of 95·6 days, while 64 officers and men inoculated at the same time and place as the person with the shortest latent period (26 days) had a mean latent period of 125·6 days. These observations suggest that individual susceptibility is the principal cause of variation in the latent period.

AGE AND SEX

The group comprised 685 males and 4 females; the majority lay between the ages of 20 and 40 years, and having but recently arrived in the tropics were physically fit before the onset of symptoms associated with the disease. There was no evidence that any common dietetic factor could have contributed to the outbreak and none showed any evidence of any food deficiency. As the inoculations of vaccine were carried out at so many different times and places the question of contaminated syringes does not arise.

During the period 1934–37 it was observed, when inoculating Colonial officials, that the disease was more severe among the older age-groups; Fox and others (1942) noticed the same tendency in Brazil.

In 431 cases where grading of severity could be made with reasonable accuracy, we obtained the following figures in regard to age and rank:—

Group	*Min. age*	*Max. age*	*Av. age*	*Cases*
Mild cases	18	55	27·8	369
Moderate cases	20	42	30·2	53
Severe cases	27	47	35·6	9

Group	*Officers*	*Other ranks*	*Civilians*	*Cases*
Mild cases	33	327	9	369
Moderate cases	9	44	0	53
Severe cases	4	5	0	9

The increase in the incidence of severe cases with age is partly responsible for the proportionately large numbers of officers in the severe group. It is also of interest that of 14 relapses, 7 were in officers, while of 15 persons invalided home for hepatitis, 9 were officers. That officers as a class are more often and more severely affected than other ranks has been observed both here and in other theatres of war in epidemics of infective hepatitis not attributable to inoculation.

SYMPTOMS

Symptoms often preceded frank icterus by a considerable though variable time: in 644 cases in which reliable information could be obtained this variation was from 0 to 56 days with an average of 7 days. The duration of preicteric symptoms showed no correlation with the latent period (table II).

Preicteric symptoms, beginning insidiously, were in the main visceral. Loss of appetite, nausea, lassitude and vague abdominal discomfort were the usual story, though occasionally the abdominal pain was severe enough to suggest biliary colic or duodenal ulceration.

TABLE II—PREICTERIC PERIOD IN RELATION TO LATENT PERIOD

Latent period (days)	No. of cases	Av. preicteric period (days)	Shortest and longest preicteric periods (days)
20– 29	1	20·0	20
30– 39	2	13·0	1–25
40– 49	4	7·2	0–29
50– 59	4	6·2	0–17
60– 69	17	7·2	0–12
70– 79	60	8·2	0–32
80– 89	92	5·9	0–41
90– 99	128	6·9	0–56
100–109	118	5·9	0–41
110–119	73	4·9	0–14
120–129	75	4·6	0–14
130–139	40	4·3	0–14
140–149	75	5·7	0–43
150–159	5	4·7	1–8
160–169	5	10·4	2–28
170–179	1	4·0	4
180–189	2	2·5	1–4
190–199	3	3·7	2–5
200–209	1	7·0	7
210–219	1	3·0	3
230–239	1	6·0	6

Anorexia not infrequently increased as the day progressed, the evening meal being poorly tolerated. Several patients commented on the fact that, though hungry, the sight of food made them lose their appetite. Many had a nasty taste in the mouth and flatulence. Fever was not a striking feature; temperatures of 99°–100° F. were observed in the preicteric period.

In many of the mild cases the onset of clinical jaundice was associated with an improvement in symptoms, though

in the moderate and severe cases the original symptoms remained or became more severe with the appearance of jaundice.

Perhaps the most distressing symptom was the profound mental depression which continued in many cases for some time after more objective symptoms had disappeared. In a few cases insomnia complicated and increased the depression, which tended to be accentuated by the moist tropical climate. In moderately severe and severe cases the loss of weight was often considerable, amounting sometimes to a stone or more. Once convalescence was established patients often developed a voracious appetite, especially for meat. Often for two to three months after returning to work patients complained that they tired easily and found mental concentration difficult.

Other symptoms require only brief mention since they were present in a very small number of the 432 patients whose symptoms were exhaustively analysed.

Joint pains were complained of by 24 patients (5·5%); the pains were unattended by any swelling of the joints, while the joints involved were as a rule the larger ones—shoulders, knees and hips. In 10 patients the pains were present either before or at the time as icterus first appeared; in 14 other cases the arthritic pains came on from the third to the fortieth day after the onset of jaundice. Arthritic pains are by no means uncommon in patients with infective hepatitis and are specially noticeable in Africans, in some of whom, before the appearance of jaundice, a tentative diagnosis of gonorrhœal arthritis has been made. The duration of the joint pains was very variable: in one case they lasted for 21 days, in another for only 2½ hours on the first day of illness, 10 days before the onset of icterus. This case is of some interest, not only because of the pain in the left shoulder-joint but because the epigastric pain was so intense that a duodenal ulcer was at first suspected; 3½ years previously the patient had a perforated gastric or duodenal ulcer, but had no recurrence of symptoms after operation until his present illness. Ford (1943) refers to 13 cases with joint pains seen in the Wembley outbreak of infective hepatitis. Joint pains cannot therefore be regarded as specific for postinoculation jaundice.

Insomnia was a striking symptom in 24 cases; *pruritus* in 16. Fourteen patients complained of *heartburn*, but in only 3 was this a presenting symptom. A *sore throat* was noted in 11, in 9 of which the symptom came on in the first four days of illness; on examination the pharynx was congested. *Blurred vision* was complained of by 3 patients, in one case on the first day of icterus, in the others on the second and third days. In severe cases there was often suffusion of the conjunctivæ before the onset of jaundice. *Dysphagia* occurred in 3 other patients early in the disease.

Dysuria was present in one patient on the first day of icterus. Involvement of the central nervous system was rare, though *dizziness* was not uncommon; *deafness* was noted once, on the twentieth day of illness, while one patient developed unilateral paresis of the 7th and 9th cranial nerves. The association with *torticollis* in one instance, with *otitis media* and *otitis externa* in one each and with *boils* in 3 cases was probably fortuitous. No meningitic symptoms were seen. Two patients had *cervical adenitis* but failed to show a positive Paul-Bunnell reaction. A few cases of *infectious mononucleosis* with jaundice have been recorded in the command. Symptoms of *acute bronchitis* came on in 4 patients from the fourth to the eleventh day after the onset of icterus, while in one case the onset of jaundice was associated with symptoms of *asthma*.

Apart from the abdominal uneasiness, sometimes amounting to actual pain, complaint of *abdominal pain* was not common. A few patients had *backache, pain at the back of the neck* or

TABLE III—PRESENTING SYMPTOMS AND SIGNS IN 432 PATIENTS

Key no.	Symptom or sign	No. of times present	Frequency (%)
1	Loss of appetite	243	56·2
2	Nausea	213	49·3
3	Lassitude	102	23·6
4	Epigastric pain	93	21·5
5	Bad taste in mouth	87	20·1
6	Constipation	72	16·7
7	Vomiting and retching	62	14·3
8	Headache	57	13·2
9	Diarrhœa	25	5·8
10	Other abdominal pain	22	5·1
11	Flatulence	19	4·4
12	Giddiness	16	3·7
13	Fever	15	3·5
14	Backache	12	2·8
15	Joint pains	10	2·3
16	Mental depression	5	1·1
17	Pruritus	3	0·7
18	Sore throat	3	0·7
19	Insomnia	3	0·7
20	Heartburn	3	0·7
21	Pain at back of neck	2	0·5
22	"Blackout"	1	0·2
23	Palpitations	1	0·2
24	Muscle pains	1	0·2
25	Blurred vision	1	0·2
26	Hiccough	1	0·2
27	Dysphagia	1	0·2
1	Liver enlarged	157	36·3
2	Bile in urine	140	32·4
3	Jaundice	58	13·4
4	Spleen enlarged	44	11·8
5	Light stools	17	3·9
6	Skin rashes	8	1·8

TABLE IV—DAYS OF APPEARANCE OF SYMPTOMS IN 432 PATIENTS

Day of illness	Anorexia	Nausea	Bile in urine	Epigastric pain	Vomiting	Lassitude	Constipation	Headache	Light stools	Diarrhœa	Flatulence	Giddiness	Other abdominal pain	Joint pains	Insomnia
1	243	213	135	93	62	102	72	57	17	25	19	16	22	10	3
2	11	11	17	8	5	4	5	4	4	..	2	1	9	..	..
3	11	8	19	2	6	3	7	6	6	..	3	1	2	1	..
4	6	3	11	6	4	3	6	5	6	3	3	2	1	..	..
5	7	6	16	1	7	..	5	4	5	2	1	..	2	..	2
6	5	3	9	2	1	..	3	3	5	1	2	..	2	1	1
7	3	4	7	4	8	..	3	3	4	..	1	2	1	1	..
8	3	5	4	5	5	..	5	2	3	..	3	2	..	..	2
9	2	6	2	1	5	2	3	3	1	4	1	..	..	2	1
10	5	5	1	2	3	1	..	3	2	..	..	1	..	1	1
11	2	2	2	1	2	1	2	..	..	..	..	..	..	1	1
12	1	1	3	2	..	1	1	..	1	..	..	..	..	..	..
13	1	2	1	..	1	1	..	..	1	1	1	..	..	..	..
14	..	..	..	5	1	..	..	1	1	..	..	..	..	..	..
15	1	1	2	3	3	4	2	1	6	..	1	1	..	2	2
16	..	1	1	1	2	1	..	1	1	..	1	1	..	..	..
17	2	2	2	3	3	..	2	1	1	1	1	..	..	1	2
18	..	1	1	..	4	..	1	..	1	3	2	..	..	..	1
19	1	3	1	3	1	..	..	1	..	2	..	1	..	..	1
20	8	8	4	3	6	1	5	3	5	3	4	3	..	2	5
30	2	1	1	3	3	..	1	3	7	2	..	..	1	1	1
40	..	..	..	..	3	..	1	..	..	..	..	..	..	1	1
Total	314	287	239	148	135	124	124	101	77	47	45	31	40	24	24

TABLE V—AGGREGATE SYMPTOMS AND SIGNS IN 432 PATIENTS

Key no.	Symptom or sign	No. of times present	Frequency (%)
1	Anorexia	314	72·7
2	Nausea	287	66·4
4	Epigastric pain	148	34·2
5	Bad taste in mouth	142	32·9
7	Vomiting or retching	137	31·7
3	Lassitude	132	30·6
6	Constipation	125	28·9
8	Headache	101	23·4
10	Other abdominal pain	48	11·1
9	Diarrhœa	47	10·9
11	Flatulence	45	10·4
12	Giddiness	31	7·2
14	Backache	28	6·4
15	Joint pains	24	5·5
19	Insomnia	24	5·5
13	Fever	20	4·6
17	Pruritus	16	3·7
20	Heartburn	14	3·2
16	Mental depression	12	2·8
18	Sore throat	11	2·5
	Pain in the back	5	1·2
26	Hiccough	5	1·2
24	Muscle pains	5	1·2
23	Palpitations	3	0·7
25	Blurred vision	3	0·7
27	Dysphagia	3	0·7
	Biliary colic	2	0·5
21	Pain at back of neck	2	0·5
22	"Blackout"	2	0·5
	Dysuria	1	0·2
	Urinary incontinence	1	0·2
	Deafness	1	0·2
	Profuse sweats	1	0·2
	Extreme restlessness	1	0·2
3	Jaundice	432	100
2	Bile in urine	432	100
1	Liver enlarged	240	55·5
2	Spleen enlarged	210	48·6
5	Light stools	77	17·8
6	Skin rashes	20	4·6
	Herpes labialis	2	0·5
	Melæna	1	0·2

myalgic pains, especially in the calf muscles. One patient complained of considerable pain in the intercostal spaces of the left side, suggesting an *intercostal neuralgia*.

Table III lists, in order of frequency, the various presenting symptoms, and table IV lists the day of the disease on which symptoms appeared. Table V gives the aggregate symptoms and their percentage frequency. The figures in table IV are in some cases smaller than in table V, because the day of onset of certain symptoms was not accurately recorded.

PHYSICAL SIGNS

The presenting and aggregate signs are set out in tables III and V.

Jaundice was present in all the 432 cases. Its duration could be determined accurately in 386 cases and is correlated against severity of the case as a whole as follows:

Group	Cases	Av. duration of icterus (days)	Maximum duration (days)	Minimum duration (days)
Mild	331	26·6	66	8
Moderate	49	48·3	86	22
Severe	6	82·2	126	52

Icterus was first seen in the conjunctivæ, later in the mucous membranes and skin. It disappeared in the reverse order.

Liver enlargement occurred in all moderate and severe and in most of the mild cases at some stage of the disease. Out of 216 cases the liver was just palpable below the costal margin in 101, enlarged 1 in. in 49, 2 in. in 49, 3 in. in 11, 4 in. in 4 and 5 in. in 2 cases. While the size of the liver usually returned to normal, as shown by physical examination, before the patient left hospital, it was not uncommon to find a palpable liver in persons returning for examination three or four months after the initial attack. In only 146 cases (33·8%) of enlargement was the liver definitely tender; in 2 of these there was extreme nodal tenderness suggestive of gall-bladder disease though there was no ancillary evidence to support such a diagnosis.

Enlargement of the spleen was demonstrable in 59 (13·6%) cases. This incidence is of the same order as that in Europeans in West Africa suffering from infective hepatitis, unassociated with yellow fever inoculation. In 5 cases the spleen was tender. In 2 of these tenderness coincided with the onset of icterus, in the other 3 it was not noted till the eighth, eleventh and twentieth days after admission. An enlarged non-tender spleen was observed in 44 cases on admission and in 15 cases from the sixth to the twentieth day. Cases with intercurrent malaria are of course excluded. Enlargement of the spleen is a fairly common manifestation of infective hepatitis. It was noted in the extensive epidemics in the Middle East in the first World War and in the present war Cameron and others (1943) described from the Middle East enlargement of the spleen in 27% of their cases of infective hepatitis. Splenic enlargement is not then a point of difference between postinoculation jaundice and infective hepatitis.

Abdominal tenderness was found in 179 cases; usually it was ill-defined but was most pronounced in the region to the right of the epigastrium. In 3 cases pain was referred to the right inguinal fossa and of sufficient severity to suggest appendicitis; 5 cases had periumbilical pain and again an early appendicitis had to be excluded. In no case was a palpable tender gall-bladder demonstrated.

Fever.—In the preicteric period a slight rise in temperature, usually not above 99° F., was a common finding except in the mildest cases. After the onset of jaundice, pyrexia was encountered in 76 patients (17·6%). The highest temperature attained was as follows:

In 50 cases between	99°	and	100°	F.
„ 17	„	„	100°	„	101° F.
„ 7	„	„	101°	„	102° F.
„ 2	„	„	102°	„	103° F.

In most cases the temperature fell in from three to four days, but in 11 cases there was prolonged pyrexia with an evening rise to between 99° F. and 100° F. for two to three weeks.

Pale stools were noted in 77 patients (17%); this is almost certainly an understatement due to the method of conservancy universal in West Africa. In 17 cases pale stools were recorded as present at the time of the onset of icterus; 41 patients developed pale stools during the first ten days of icterus. The duration of pale stools was as a rule short.

CARDIOVASCULAR SIGNS

Pulse-rates of below 60 per min. were present in 42 cases (9·7%), with the patients lying in bed. In 15 the pulse-rate was 56 to 60; in 13 between 51 and 55; in 10 between 46 and 50 per min. Bradycardia usually developed in the second week of jaundice. Tachycardia, as judged by pulse-rates of over 90 at complete rest, was present in 9 patients (2%); in 3 there was a persistent rate of 100 or more. No abnormalities in systolic or diastolic blood-pressure were observed.

Two patients (cases 1 and 2) developed tachycardia with irregular rhythm followed by Da Costa's syndrome, and one (case 3) developed bradycardia with ventricular extrasystoles, as follows:

CASE 1.—Aged 40. Symptoms lasted for 137 days. The principal features were constipation, anorexia and flatulence, giddy spells and fairly severe headaches, severe depression, very deep "olive" jaundice, pale stools, bile in the urine and enlargement of the liver and spleen.

Jaundice appeared on the 55th day of the disease. On this day tachycardia, rate 100, was noted (temperature and respirations were normal). On the 57th day the pulse-rate had increased to 120, and dropped beats and sinus arrhythmia were noted. Blood-pressure 108/84 mm. Hg. On the 58th day it was noted that the pulse-rate was slowed by coughing. This sign was very striking, the estimated rate after a cough being 50–60 per min., but this rate was only maintained for two or three beats, the pulse rapidly returning to its former quick rate. The tachycardia continued for 13 days, during which time the blood-pressure remained fairly constant and the heart sounds were of poor quality. Over this period the liver edge had moved from 1 in. to 4 in. below the costal margin. There was no œdema, and no engorgement of the cervical veins.

On the 69th day, the patient was feeling considerably better in spite of the persistent depression and dyspeptic symptoms. The pulse-rate was 60 per min. and regular. Blood-pressure 116/72 mm. Hg. On the 70th day the pulse-rate was 58 and on the 72nd day 46. On the 82nd day the patient complained of feeling his heart thumping especially on sitting up; he was very depressed. The pulse-rate was 60. The liver edge was 3 in. below the costal margin. On the 100th day, liver 4 in. below the costal margin. On the 127th day, he complained of palpitations, giddiness, and faintness on exertion; treated by reassurance and graduated exercises. On the 137th day he still complained of palpitations but was able to perform strenuous exercises, and was then much more cheerful though the liver edge was still 2 in. below the costal margin.

He was seen three months later looking very fit, and able to perform strenuous duties. No abnormal physical signs were found, the liver being no longer palpable.

CASE 2.—Aged 32. Symptoms lasted for 86 days. Began with diarrhœa which lasted for 4 days, then anorexia, nausea, flatulence, hiccough and severe depression. Other features were fairly deep jaundice with troublesome pruritus, enlargement of the liver 3 in., and of the spleen 1 in. below the costal margin; bile and albumin in the urine.

On the 52nd day he complained of attacks which began with the sensation of the heart missing a few beats; he was conscious of his heart's impulse increasing in rate and force until it seemed to shake the bed. The maximum speed lasted for about ten minutes, and then the heart gradually slowed down. During the attack he felt very dizzy and had to lie down. He also complained of severe headaches. At its maximum the rate was found to be 144 per min. with occasional dropped beats; BP 150/88 mm. Hg. No signs of cardiac failure. At first these attacks occurred three or four times daily; they then became less severe and less frequent during the next 25 days. On the 53rd day an irregular pyrexia developed which lasted for 20 days; the maximum temperature recorded was 101·4° F.

By the 78th day palpitations and giddiness, on exertion only, were complained of; these symptoms responded rapidly to reassurance and graduated exercises.

CASE 3.—Aged 42. Symptoms lasted for 31 days. Admitted for investigation of chest. Chronic bronchitis and

emphysema diagnosed. Jaundice developed while in hospital, and 3 days later he complained of mild epigastric pain. On the 13th day of disease the jaundice began to fade. On the 15th day coupled beats were noted which disappeared on exertion and were not again present; the pulse-rate was 54; BP 118/78 mm. Hg. On the 24th day an electrocardiogram showed ventricular extrasystoles, otherwise normal in all leads.

SKIN RASHES

In 432 cases analysed, 24 or 5·5% exhibited some form of skin rash. These are summarised in table VI, in which is shown the nature of the rash, its time of onset relative to the onset of clinical jaundice, and its duration.

TABLE VI—SKIN RASHES IN 24 OUT OF 432 CASES

No.	Type	Onset in relation to onset of jaundice	Duration (days)
1	Urticaria	8 days before	10
2	,,	8 ,, ,,	2
3	,,	7 ,, ,,	2
4	,,	7 ,, ,,	2
5	,,	4 ,, ,,	2
6	,,	4 ,, ,,	1
7	,,	5 ,, ,,	1
8	,,	Few hours before	¼
9	,,	Same time	1
10	,,	,, ,,	1
11	,,	1 day after	3
12	,,	5 days ,,	23
13	,,	9 ,, ,,	3
14	,,	12 ,, ,,	4
15	Urticaria + Purpura	1 day before 32 days after	1 5
16	Urticaria + Purpura	1 day before 7 days after	1 6
17	Purpuric	1 day ,,	2
18	,,	7 days ,,	4
19	,,	11 ,, ,,	4
20	Erythematous	Same time	10
21	,,	1 day after	2
22	Maculopapular	25 days before	35
23	,,	3 days after	5
24	Undescribed	2 days before	4

Findlay, Dunlop and Brown (1931) described an erythematous rash resembling german measles occurring in the preicteric stage of a case of infective hepatitis in an adult male. Glover and Wilson (1931) also noted erythematous rashes in two or three cases in an outbreak of infective hepatitis in a public school, involving 94 boys. Dunlop (1932), investigating an epidemic in Surrey, saw in small children a number with erythematous rashes usually starting in the preicteric phase. Pickles (1939), in describing the Wensleydale outbreaks, noted skin rashes in both the preicteric and icteric phases. In the 1929–30 outbreak the incidence of skin rashes appears to have been 4–5%. In 1935, in a second outbreak in Wensleydale, rubella-like rashes were again seen in the preicteric phase. Ford (1943) observed papular urticaria in 4 out of 300 cases in Wembley, and Cameron and others (1943) noted urticaria in 3 cases of infective hepatitis in Palestine. Finally, in West Africa skin rashes of various types have been observed both in Europeans and Africans suffering from infective hepatitis unassociated with inoculations: the rashes were indistinguishable from those seen in the series here described.

The following 5 cases illustrate the various types of rash seen.

CASE 4.—*Urticaria.* (Inoculated against yellow fever Dec. 2, 1942; arrived West Africa Jan. 12, 1943.) Feb. 13, 1943: nausea, tightness across chest and lassitude. Feb. 14: itching rash on the external borders of the thumbs and then on the forearms, roughly symmetrical. Feb. 17: anorexia, dizziness and lassitude; vomited once at night. Feb. 21: both left eyelids were swollen and the site of an urticarial rash; a little later the same urticarial rash appeared on the back of the legs with one large patch on the outer border of the left hip; this large patch faded in about 36 hours; the fingers were now swollen and itching; by the evening the eyelids had improved; conjunctivæ jaundiced. Feb. 22: woke with the eyelids of both eyes closed up and large patches of urticaria on both buttocks; the rash began to fade in the evening and in the next 24 hours had nearly disappeared. Feb. 24: general aching in the limbs; liver 1 in. below costal margin. Thereafter no rash was seen and recovery was uninterrupted, but an icteric tint was still present in the conjunctivæ for about a fortnight.

CASE 5.—*Urticaria and purpura.* (Inoculated against yellow fever Nov. 20, 1942; arrived in West Africa Jan. 8, 1943.) March 16, 1943: urticaria on the shoulders and chest which lasted for 24 hours. March 17: complained of constipation and blurred vision and noticed that his eyes were yellow. Subsequently headache, aching in the knee-joints, mild rigors and sweating, and later, anorexia, nausea and diarrhœa. Bile was found in the urine and both the liver and spleen were enlarged. Diarrhœa continued for some days, with occasional vomiting. April 19: petechial purpuric rash was first noticed, nine spots on the back and seven on the abdomen, bright red spots about the size of a pin's head, which did not fade on pressure. April 22: new spots appeared and there were now fifteen spots on the abdomen and nine on the back. April 28: spots almost faded, no symptoms.

CASE 6.—*Purpura.* (Inoculated against yellow fever Dec. 12, 1942.) Suffered from infective hepatitis in England in 1925. April 2, 1943: complained of constipation and lassitude and noted dark urine. April 9: anorexia and pale stools. April 12: jaundice of conjunctivæ, bile in the urine. April 17: liver 1 in. below the costal margin. April 19: jaundice fading rapidly; purpuric spots identical with case 2 noted, five on the back and five on the chest and abdomen. April 21: twenty-two spots on the back, and ten on the abdomen and chest. April 28: rash has now disappeared; no symptoms.

CASE 7.—*Maculopapular.* (Inoculated against yellow fever Nov. 29, 1942.) Feb. 25, 1943: noted dark urine. Feb. 28: jaundiced; complained of epigastric pain, flatulence, constipation, weakness and dizziness. Bile was present in the urine. Jaundice was fairly well marked. Symptoms lasted for 48 days. The liver enlarged to 1 in. below the costal margin during the attack. Feb. 31: some wasting of the subcutaneous tissues with myotatic irritability. The rash was noted on March 3, and consisted of red spots about ¼ to ½ in. in diameter on the shoulders. The spots were slightly raised and itched so much that sleep at night was impossible. Sweating made the irritation worse. Some days later similar spots appeared around the axillæ, on the abdomen and buttocks, where they were most numerous. The spots on the shoulders began to fade about March 17, and had almost disappeared on March 29. On March 31, the patient said that all spots were now fading and those on the shoulders had practically gone. On the shoulders, the site of the earliest spots, there were very faint café-au-lait spots. On the back of the neck there was a dusky red irregular patch, about 3½ in. vertically and 1½ in. horizontally, the upper part of the lesion being obscured by the hair of the scalp; it was not raised and did not fade on pressure. On the buttocks, upper and outer parts of the thighs, around the axillæ and on the back there were pale brown spots, still slightly raised, ¼ to ½ in. in diameter. There were similar spots just below and lateral to the nipples, and in addition raised red spots which faded on pressure, leaving a pale brown mark. Apart from the patch on the neck, all spots faded on pressure. The patient had never suffered previously from skin rashes and had not taken any sulphonamides or other drugs. Itching was worse whenever the patient became hot. Once the spots had appeared they remained and did not come and go. April 3: the rash had faded still further and the red spots had now all become brown; stools light grey; liver enlarged 1 in. and a little tender. April 7: the patch on the back of the neck now fading rapidly; epigastric discomfort, backache, anorexia and slight nausea; no headache. April 11: jaundice has increased; nausea, vomited four times in the night, also hypogastric pain followed by diarrhœa. April 16: jaundice fading quickly. April 20: very pale, coffee-coloured spots are all that remain of the rash. April 31: discharged.

(In the other case with a maculopapular rash the spots were distributed on the abdomen, chest and arms; itching was also a well-marked feature, but the duration was only 5 days.)

CASE 8.—*Erythema.* (Inoculated against yellow fever Nov. 29, 1942, arrived West Africa Jan. 11, 1943.) On March 8, 1943, he began to suffer from nausea, anorexia and occasional vomiting, gradually increasing in severity. March 29: icterus of skin, mucous membranes and conjunctivæ; tongue clean, fair appetite, bowels regular, stools a little light in colour, apyrexial; erythema on the abdomen, thorax and to a less extent on the back, not unlike rubella. April 2: rash blotchy and in places almost eczematous in type; no adenopathy or coryza; liver enlarged 1 in. and tender. Urine: bile pigments and bile-salts present; albumin a trace.

April 6: severe dyspepsia. April 7: much better, rash now gone.

It will be seen that only two of the above patients were inoculated on the same date; there is thus no relation between the occurrence of erythema multiforme and any particular ampoules of yellow fever vaccine. Two cases of herpes labialis were seen. It is of interest that one patient who had had urticaria in 1940 and again in 1942 had no urticaria in association with jaundice after the injection of yellow fever vaccine.

HÆMORRHAGES

Apart from the purpuric skin rashes already referred to, hæmorrhages were not common. Hæmaturia was observed in 4 cases, hæmatemesis in 4, one having bleeding gums in addition; one fatal case had hæmatemesis. In addition, epistaxis and subconjunctival hæmorrhages were each observed in one case. Hæmorrhages other than purpuric rashes were thus observed in 11 (2·5%) of cases. Illustrative cases are as follows.

CASE 9.—*Hæmaturia.* May 8, 1943: epigastric discomfort, dizziness, occipital headache, nausea, anorexia and constipation. May 11: noticed dark urine. May 12: jaundiced. May 14: liver edge 2 in. below the costal margin; jaundice was very deep; urine contained bile-salts, bile-pigments, albumin and numerous red blood corpuscles. May 17: jaundice very faint; no symptoms; trace of bile in the urine but no red cells found. May 27: urine normal; no jaundice. No sulphonamides had been taken and no bilharzia ova were present.

CASE 10.—*Hæmatemesis.* Feb. 8, 1943: anorexia, nausea, vomiting and severe abdominal pain. Feb. 12: jaundice noted. Feb. 15: jaundice very deep, liver enlarged 1 in. below costal margin; severe epigastric pain and vomiting were the principal symptoms; stools pale but not quite clay-coloured; urine contained bile, albumin, granular and hyaline casts. Feb. 27: without premonitory pain a profuse hæmatemesis occurred at 07.30 hours; BP 86/30 mm. Hg; hæmoglobin 45%, very collapsed; continuous drip blood-transfusion was begun, six pints of blood and one pint of plasma being given; occasional vomiting but no further hæmatemesis. March 1: vomiting ceased. March 12: melæna still present. March 18: stools normal; hæmoglobin 76%, red cells 3,400,000 per c.mm.; urine normal. April 3: hæmoglobin 85%, red cells 4,100,000 per c.mm.

Twelve years before, at the age of 18, he had begun to have symptoms suggestive of duodenal ulcer, but for three years before joining the army he had been entirely free from symptoms and during his service career of 21 months had no abdominal symptoms.

CASE 11.—*Hæmatemesis and bleeding gums.* Feb. 4, 1943: treated for pains in the shoulders. March 1: noticed dark urine. March 6: noticed yellow eyes. March 7: passed tarry stools, felt faint and sweated; jaundice of conjunctivæ, palate and skin present, spleen palpable and tender, mucous membranes pale; BP 112/84 mm. Hg, bile in urine. March 9: anorexia, nausea and vomiting began; vomiting continued and after 7 days flecks of bright red blood were seen in the vomitus; at this time the epigastric pain was severe and the jaundice was well marked; liver edge 1 in. below the costal margin. March 24: symptoms less severe. March 26: liver enlarged 3 in., spleen palpable; vomited only once today. March 27: pain in the gums and bleeding from the gum margins, which are œdematous and bleed on rubbing; bile, albumin and ketones in the urine. April 1: jaundice fading; complains only of feeling depressed. April 19: no symptoms; jaundice very faint, no other abnormal physical signs.

CASE 12.—*Conjunctival hæmorrhage.* March 24, 1943: severe epigastric pain and nausea lasting for 10 minutes. March 25: icterus noticed; bile in urine; anorexia, nausea and depression developed later. April 6: small subconjunctival hæmorrhage noticed in right eye. April 19: no symptoms; jaundice faint.

CASE 13.—*Hæmoptysis.* Jan. 28, 1943: dizziness, nausea and abdominal pain: history of bronchitic attacks. Feb. 4: jaundice first noticed; liver edge 1 in. below costal margin; bile in urine. Feb. 6: developed dry cough. Feb. 7: coughed up mucus with flecks of bright blood. Feb. 8: scattered rhonchi heard over the lungs, especially the bases; sputum showed no acid-fast bacilli; liver edge now felt 3 in. below costal margin. Feb. 10: no symptoms; liver edge 1 in. below costal margin. Uneventful recovery.

CASE 14.—*Epistaxis.* Jan. 11, 1943: symptoms began. Jan. 23: jaundice noted. Jan. 28: epistaxis for an hour. Feb. 2: icterus index 50+. Feb. 6: jaundice fading. Feb. 10: urine normal; liver still 2 in. below costal margin, but no symptoms.

LABORATORY INVESTIGATIONS

Red cells and hæmoglobin.—Apart from one patient whose anæmia was directly attributable to his hæmatemesis, no characteristic changes were observed in the peripheral red blood-cells or the hæmoglobin percentage. Thus in 37 patients, examined to exclude anæmia as a complication, the findings were:

5·5–5	million per c.mm. and Hb.				97–103%	in 18	cases
5–4·5	,,	,,	,,	,,	90–97%	,, 12	,,
4·5–4	,,	,,	,,	,,	75–90%	,, 4	,,
4 –3	,,	,,	,,	,,	60–75%	,, 3	,,

Profound anæmia is no more common in the hepatitis after yellow fever inoculation than it is in infective hepatitis. One patient, aged 27, with a Hb. of only 60% and 3,000,000 red cells per c.mm., was admitted with symptoms of bronchial asthma, the first attack ever experienced. In no case have the red cells been as low as in the case reported by Hill and Hausmann (1943) where the count was 2,300,000 per c.mm. Greenblatt and Kaplin (1943) claim that target cells are a constant finding in the blood of patients suffering from hepatitis after yellow fever inoculation. While no specific records were kept, we may say that target cells were not of such frequency in films as to excite comment; moreover, target cells were found regularly varying from 3% to 6% of the whole, in an examination of films from two Europeans and four Africans suffering from infective hepatitis not associated with yellow fever immunisation. Target cells cannot then be regarded as a point of differentiation.

Blood sedimentation-rates showed no characteristic change, nor did the prothrombin index estimated by the method of Innes and Davidson (1941) exhibit significant variations from a parallel series of controls.

Wintrobe and Shumacker (1933) observed a macrocytic anæmia in a case of infective hepatitis, associated with a histamine-fast achlorhydria, spontaneous recovery taking place. We have not observed a parallel case in this series.

The leucocytes.—In the average healthy man the total leucocyte count may fluctuate between 4000 and 10,000 with a mean of 7000 per c.mm. It was impossible under the conditions of the investigation to do repeated accurate leucocyte counts in more than a few cases. Out of the 152 counts recorded, 11 or 7·2% were below 4000 and 71 (46·7%) had counts of 6000 and under; 12 (7·9%) had counts of over 9000, and of these 4 were over 10,000. The relatively high leucocyte counts—9000 and above—were observed principally either in the early preicteric or in late convalescent stages. In those cases in which counts fell below 6000 there was a neutropenia with a relative increase in small lymphocytes and a slight increase in the large mononuclear cells. In a certain number there was a slight absolute lymphocytosis with occasional atypical monocytes. In the great majority, the neutropenia occurred in the 7–14 days of clinically manifest jaundice, the convalescent period being associated, if anything, with a slight leucocytosis. These findings are not different from those in infective hepatitis. In 3 severe cases in which the white-cell count was followed up, an absolute leucopenia persisted up to the 39th to 43rd days, in each case being 3000 or under. No complicating disease was found in these patients to account for this neutropenia and they ultimately made an uninterrupted recovery.

Icterus indices showed wide variation, and, just as the depth of clinical jaundice gave no indication of the severity of the disease, so the estimation of the icterus indices and the van den Bergh reaction were of little practical help. Both were of occasional use in establishing cases before icterus could be seen clinically, when the icterus index could be observed to rise from 6 to 12. The icterus index and van den Bergh reaction had a use, too, in confirming cases of infective hepatitis sine jaundice.

Liver-function tests.—A certain number of patients, slow in recovery and having clinical manifestations consistent with some degree of persistent liver damage, were

examined in the hope that they might show evidence of impaired liver efficiency. The tests employed were:

(1) the lævulose-tolerance test;

(2) the lævulose-tolerance test of Herbert (1939);

(3) the prothrombin-index test of Innes and Davidson (1941);

(4) cholecystography with 'Opacol.'

Out of the 10 cases examined by the normal lævulose test and by Herbert's modification, only 1 showed impairment of liver function. In this patient the rise in blood-lævulose after ingestion of 50 grammes of pure lævulose was 48 mg. per 100 ml. in one hour, a normal maximum being taken as 30 mg. per 100 ml., the rise above the fasting level for pure lævulose, as estimated by Herbert's technique, being 16 mg. The prothrombin-index did not fall outside normal limits in 30 patients examined. Cholecystograms with opacol carried out in 16 patients showed a well-marked delay of filling of the gall-bladder in 3. In the tropics it appears advisable to use a "double divided dose" technique with solution of the sodium tetraiodophenolphthalein in buffered distilled water, the cakes or lumps being crushed up as required.

(*To be continued*)

CARDIAC NEUROSIS AS A MANIFESTATION OF HYPOGLYCÆMIA

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DURING the winter of 1940 and the earlier months of 1941, four patients were admitted to hospital under my care with a previous diagnosis of effort syndrome (Da Costa's syndrome). A fifth has more recently been added to their number. In each the symptoms and signs appeared to be related to hypoglycæmia. Whether in each case the previous label was correct is a question of semantics with which I am not now concerned. Each patient had symptoms suggesting a cardiac abnormality, and each had a normal heart.

CASE-RECORDS

CASE 1.—A sergeant, aged 48, formerly a policeman, began in September, 1940, to suffer from attacks of giddiness during exercise. "Everything went black" and sometimes he fell to the ground, though he did not lose consciousness. He became very pale and sweated profusely. There was a throbbing pain in the region of the heart, going up into the neck to a definite point at the bifurcation of the common carotid artery. He felt that his heart was going to burst, and he was breathless. The attacks were followed by headache. Between these severe attacks he suffered from undue breathlessness on exertion and undue fatigue. After the attacks had gone on for two months he was admitted to hospital, where he was found to be a man of good physique and intelligence with a somewhat florid appearance. He blushed easily. The resting pulse-rate was usually in the neighbourhood of 90 per min., rising to 96 and occasionally dropping as low as 60. BP 135/90 mm. Hg. There was visible sweating during examination. There was an apical systolic murmur, of which he had been told, but no clinical or radiological evidence of heart disease. The glucose-tolerance test showed values of 65 (fasting), 100, 105, 84 and 80 mg. per 100 c.cm. Unfortunately the test was carried no further, for it is probable in the light of the more recent work of Harrison, Finks and Winston-Salem (1943) that much lower values would have been found in the 2–4 hour period. The patient was told to run along the hospital covered way until tired. After about 200 yards he was unable to continue. The pulse-rate was 120 and the heart was visibly overacting. He was dyspnœic, pale and sweating profusely, and complained of severe pain in the left chest. He did not fall to the ground, but said that this was a typical moderate attack. The blood-sugar was 50 mg. per 100 c.cm. He was given a glucose drink. His symptoms ceased within two or three minutes instead of the usual twenty minutes. Thereafter all his attacks were rapidly aborted by taking sugar.

CASE 2.—A private of 27 began to suffer from breathlessness on slight exertion about three years before admission. About eighteen months before admission he was in hospital complaining of headache, dizziness and palpitations. In the last few weeks he had a cough and cold, and all his symptoms greatly increased. His physique was very poor. During any examination his pulse-rate would rise to 100–120 per min., settling again afterwards to about 70. A glucose-tolerance test gave the figures 68 (fasting), 100, 106, 112 and 82 mg. per 100 c.cm. An insulin-glucose test (Himsworth 1940) gave a fasting level of 65, and, at ten-minute intervals, <30, <30, <30, 50, 67 and 96 mg. per 100 c.cm. (the method used does not allow readings below 30 mg. per 100 c.cm.). Almost immediately after the insulin had been given intravenously the patient became very distressed, saying he was "in for one of his attacks." He became dyspnœic, sweated profusely, and complained of severe pain "in the heart." His pulse-rate rose to 140. After thirty minutes the symptoms subsided rapidly. Thereafter his attacks could always be aborted by taking sugar.

CASE 3.—A private, aged 26, formerly a baker's roundsman, complained of attacks of giddiness for five years accompanied by breathlessness and pain over the heart, always brought on by exertion, but often only slight exertion, such as pushing his barrow. Between attacks he suffered from fatigue, headaches and flatulence. He had previously never been ill. He was married, with one child, a teetotaller and non-smoker who kept budgerigars as a hobby. He was only 5 feet in height, of puny build and poor intelligence. The cardiac response to exercise was good. Pulse-rate 84 per min. BP 125/85 mm. Hg. Otherwise nothing abnormal was found on clinical examination. A glucose-tolerance test gave a fasting level of 91, and, at half-hourly intervals after 50 g. of glucose, 110, 75, 65 and 54 mg. per 100 c.cm. An hour and a half after taking the glucose he showed typical hypoglycæmic effects accompanied by precordial pain and palpitations. A fortnight later the figures were 72 mg. fasting and after glucose 90, 71, 63 and 77. At the end of the first test he was given sugar and immediately recovered. On the second occasion he had the same symptoms at the same time and recovered spontaneously in half an hour. On another occasion, his fasting blood-sugar was 80 mg. He then ran 600 yards in five minutes, when an attack came on. The blood-sugar was found to be 60 mg. The attack was immediately relieved by sugar. An insulin-glucose test showed a fasting blood-sugar of 68 mg., followed, at ten-minute intervals, by values of <30, <30, <30, <30, 30, 49 and 62 mg. per 100 c.cm. Precordial pain and tachycardia were the only symptoms produced by these extremely low values. The pain came on within a minute or two and continued for about fifty minutes, after which it gradually ceased. The startlingly low blood-sugar values recorded in this case and case 2 without loss of consciousness suggest that the patients had become accustomed to them by long usage.

CASE 4.—A sapper, aged 21, formerly a plumber, had always been healthy except for headaches which he had had about every three days for as long as he could remember; and fainting attacks, which had occurred about once a month until the age of 18, but more frequently since. The fainting attacks were preceded by hyperpnœa and were accompanied by pain "round the heart." He had always found his headaches depressing and his dislike of army life had increased his depression. He did not suffer unduly from dyspnœa except immediately before attacks of pain, but sometimes when at work his heart seemed to stop. He was a healthy looking man with a pulse-rate of 58–64 per min. and BP of 130/80 mm. Hg. Nothing abnormal was found on clinical examination. A glucose-tolerance test showed a fasting value of 69 mg. and half-hourly figures of 110, 112, 62 and 54 mg. After the test he had slight precordial pain which was relieved by glucose. The insulin-glucose test gave a fasting value of 66 and ten-minute values of 60, 50, 32, 36, 52 and 78 mg. per 100 c.cm. During the test he did not have a typical attack but was very somnolent while the blood-sugar was below 50. Hard exercise, however, always induced a typical attack which was always relieved by glucose.

CASE 5.—A gunner, aged 22, formerly a bricklayer, was admitted complaining of attacks of giddiness on exercise, and precordial pain, followed by eyeache and general headache, for eight years. He had congenital absence of the right pectoralis major muscle, but was otherwise an exceptionally well-built man. His pulse-rate was 72 per min. and BP 140/85. The feet were very hot and sweaty. There was tenderness over McBurney's point (X rays showed some appendicular stasis). A glucose-tolerance test gave a fasting value of 71, with half-hourly values of 86, 90, 87 and 60 mg. per 100 c.cm. At two hours he had an attack of giddiness and precordial pain and sweated profusely. His pulse-rate rose

to 110. During an attack which occurred spontaneously his blood-sugar was found to be 70 mg. An attack was induced by exercise on an empty stomach, when the blood-sugar was found to be 55 mg. per 100 c.cm. Both the spontaneous and induced attacks were immediately relieved by glucose.

DISCUSSION

The signs and symptoms of Da Costa's syndrome are, as Wood (1941) has pointed out, induced by the emotion of fear. This emotion produces somatic effects by increasing the output of adrenaline and thus the sensitivity of the sympathetic nervous system. The early signs and symptoms of hypoglycæmia (unlike the late ones which are due to glucose-starvation of the brain) are likewise due to the excessive output of adrenaline. It is therefore only to be expected that the list of the signs and symptoms of Da Costa's syndrome given by Wood should read like a list of those of hypoglycæmia.

That hypoglycæmia may produce signs and symptoms suggestive of cardiac disease has been recognised for many years. Harris (1935) described the occurrence of tachycardia, palpitations, extrasystoles, a sense of suffocation and precordial pain in patients suffering from spontaneous hypoglycæmia. Waters (1931) described a patient in whom paroxysmal tachycardia was precipitated by glucose deficiency. Messenger (1938) studied the cardiovascular signs occurring during insulin-shock treatment in mental disorder and noted flushing, pallor, increased pulse-pressure, "pistol-shot sounds" over large arteries, capillary pulsation and "to and fro" murmurs along the sternal border, all regarded by him as signs of an overacting heart. Sippe and Bostock (1933) pointed out that in patients suffering from angina an attack may be precipitated by hypoglycæmia, an observation which I can confirm. They described one case in which typical attacks occurred only when the patient was hypoglycæmic. Such cases may perhaps be related to the action of insulin in increasing cardiac output (Ernstone and Altschule 1931). Shillito (1934) described a patient whose typical "vasovagal" attacks were associated with hypoglycæmia, an occurrence easily explicable in the light of the work of Grant and Pearson (1938) on the vasodilator effect of adrenaline. Previous writers do not appear to have realised the possible significance of their observations in Da Costa's syndrome. Since my own observations were made, the relationship has been recognised by Harrison, Finks and Winston-Salem (1943), who described 31 patients who suffered from symptoms identical with those of Da Costa's syndrome two or more hours after meals, reproducible by insulin and relieved by glucose. Though the symptoms were always associated with a low blood-sugar, the glucose-tolerance test as usually performed was often an unreliable guide, partly because the symptoms were always at their height two to four hours after a meal and therefore after the end of the test, and partly because, whereas some patients may have attacks at a blood-sugar level of 70 mg. per 100 c.cm., others may descend to extremely low levels before symptoms begin. It is significant that only 3 of the 31 patients had a fasting blood-sugar of less than 80 and that 2 of them had curves of the lag-storage type rising to 190 and 260 mg. per 100 c.cm. respectively.

Of the 31 patients described by Harrison and his colleagues, 14 had previously been diagnosed as "cardiac neurosis." In 7 no signs of neurosis were found. The remaining 7 continued to show signs of neurosis despite the relief of their cardiac symptoms by a high glucose diet. In my series, cases 1, 2 and 5 were not obviously neurotic and were apparently completely relieved by treatment, whereas cases 3 and 4, who were obviously neurotic, were relieved of their cardiac symptoms without any improvement in their emotional condition.

The observations on these 5 patients support the conclusion of Harrison and his colleagues, who write, "The similarity between the clinical manifestations associated with a decline in blood-sugar and the phenomena of true cardiac neurosis is so great that we are no longer willing to make a dogmatic diagnosis of cardiac neurosis without excluding hypoglycæmia."

SUMMARY

The symptoms of 5 patients, previously diagnosed as suffering from Da Costa's syndrome, were found to be related to hypoglycæmia. The early symptoms of hypoglycæmia are in reality those of excessive adrenaline secretion. Da Costa's syndrome is caused by abnormal fears. The somatic symptoms of fear are also due to excessive adrenaline secretion. It is therefore not surprising that the symptoms of hypoglycæmia and of Da Costa's syndrome are identical. Since the symptoms of the former can be relieved by a suitable diet, an effort should be made to evaluate the part played by abnormal carbohydrate metabolism in producing the symptoms of each patient with Da Costa's syndrome or a similar cardiac neurosis.

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EOSINOPHILIA WITH PULMONARY DISEASE ON RETURN FROM THE TROPICS

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EOSINOPHILIA in Europeans returning from the tropics is being encountered with increasing frequency. In the great majority of cases it is associated with parasitic infections, allergic conditions or skin lesions, but elucidation of the cause may prove difficult, especially as important investigations which might have been carried out at the onset may unavoidably have been omitted or not recorded.

The association of eosinophilia with pulmonary infiltration was recorded by Loeffler [1] in Switzerland in 1932 and 1936 (51 cases), and later by Weingarten [2] (81 cases), Simeons [3] (35 cases) and others as a separate, more serious and chronic disease occurring in the tropics. These conditions have been distinguished as "Loeffler's syndrome" and "tropical eosinophilia," and 3 further cases have been described recently in Palestine, USA and Egypt under one or other of these headings. We believe, however, that the two conditions are not clearly distinguishable, and the case described below has features in common with both.

CASE-REPORT

An Englishman, aged 37, came under our observation on being invalided home from India. As a child he had pneumonia, mild attacks of winter bronchitis had occurred since. After three months in Eastern Bengal he had a severe attack originally diagnosed as bronchitis, with which he was in bed for a fortnight. His chest was X rayed at the time, and it was reported that the left lung showed marked congestion with an area of increased opacity, and that there was extensive fibrosis of the right lung with slight tenting of the diaphragm. His symptoms were a gripping pain in the chest and a productive cough. The cough was worse at night and was accompanied by wheezing; during the day there was little cough or wheeziness. An X ray of the chest after ten weeks showed no abnormalities, but a slight cough persisted during the rest of his stay in India (19 months). Four months after the onset of the acute pulmonary condition an eruption appeared on his skin, hitherto clear. It began in the flexures and gradually spread to involve the limbs, trunk and scalp. The diagnosis of seborrhœic eczema was made, and this condition proved so resistant to treatment that he was eventually repatriated. During his stay in India he had lost two stone in weight.

On his arrival in England (March 21, 1944) a few scaly patches remained on the limbs. He felt well in himself, but a slight cough persisted, although there were no physical or radiographic signs of disease in the chest. A routine pathological overhaul, as carried out on all RAF patients returning from the tropics, showed a leucocyte-count of 9000 per c.mm. with 16% of eosinophils, none abnormal in form. In view of this finding he was subjected to the following investigations:

(1) Repeated stool examinations, including two series after vermifuges, for helminths, ova, vegetative protozoa, cysts and

pathogenic bacteria; (2) several urine examinations, including one after prostatic massage, for bilharzia hæmatobium; (3) midday and midnight blood examination for filaria; (4) sputum examinations; (5) sigmoidoscopy; (6) Casoni skin test; (7) X rays of muscles; (8) Bencard's skin tests for allergic sensitivity; (9) opaque bronchography.

All these produced completely negative results, although *Trichomonas hominis* was seen in one specimen of stools after a vermifuge. White-cell counts were as follows:—

Date	Total leucocytes	Eosinophils per cent.	Eosinophils number
March 27	9000	16	1440
,, 30	..	12	..
April 15	14,500	32	4640
,, 17	16,000	40	6400
May 2	9000	20	1800
,, 12	7000	8	560
,, 16	7000	6	420

For nearly three days from April 6 he had a raised temperature (102° F. at its height), with a persistent productive cough and rhonchi throughout the lungs, but with no expiratory prolongation. On recovery a slight cough persisted, no worse than it had been previously, but it will be noted that the accompanying rise in eosinophils lasted for several weeks. On May 18 he was sent on his long-anticipated "disembarkation leave."

CRITERIA OF THE TWO SYNDROMES

Loeffler's Syndrome	*Tropical Eosinophilia*
(1) Recorded in Europeans.	(1) In all races.
(2) Dry European climate.	(2) Tropics, near sea or in humid atmosphere.
(3) Mild disease lasting few days; temperature raised 1 or 2 days.	(3) Acute febrile onset lasting a few weeks; then becomes chronic.
(4) Variable transient eosinophilia (up to 66%).	(4) Variable persistent eosinophilia (up to 89%).
(5) No splenomegaly recorded.	(5) Splenomegaly in acute phase.
(6) X ray shadowing of the lungs, variable in type, but always resolving quickly.	(6) Disseminate mottling of both lungs in second week of illness; after acute phase chronic bronchitis.
(7) Speedy spontaneous recovery.	(7) Chronic, unless treated with arsenic.

Thus baldly set out the two syndromes appear to be quite distinct, but on detailed consideration this separation appears somewhat artificial:

(1) *Race.*—Tropical eosinophilia occurs in all races in India, the relative preponderance of Indians being explicable by the population ratio. Loeffler's syndrome has been described only in Europeans: this may be fortuitous, since X rays for minor maladies are unlikely to be carried out in India.

(2) *Climate.*—The contrast between the climates in which the two conditions are described is striking. Nevertheless, a typical example of tropical eosinophilia, occurring in the dry climate of Egypt, has recently been recorded,[4] and conversely a case of Loeffler's syndrome occurring outside Europe had a previous history of bronchitis related to humidity.[5]

(3) *Duration of illness.*—In Loeffler's original cases the disease sometimes lasted for several weeks. One of his cases (no. 5) had a history of pleurisy two years previously; the details of past illnesses in other cases are not recorded. Freund and Samuelson's case of Loeffler's syndrome [5] had a six years' history of repeated attacks of bronchitis and asthma. Our own case has a very long history of bronchitis. These examples may mean nothing more than that Loeffler's syndrome or tropical eosinophilia occurred in subjects with a previous chest history, but since Simeons [3] described tropical eosinophilia as characterised by "febrile intermittent attacks of bronchitis, often with symptoms of bronchial asthma" they may be of fundamental importance.

(4) *Eosinophilia.*—It is not so much the height of the eosinophilia as its persistence which is said to differentiate the two conditions. Yet Loeffler himself states, "The eosinophilia persists rather a long time" (p. 1069). Parkes-Weber's case of Loeffler's syndrome [6] maintained an eosinophilia of 9% after four months, and in that of Freund and Samuelson [5] 8½% was the final recording.

(5) *Splenomegaly.*—Unlike Weingarten,[2] Simeons [3] found enlargement of the spleen in only 50% of cases of tropical eosinophilia. Such a finding may possibly bear some relation to the severity or chronicity of the disease process, as in malaria, and in so mild and transient a condition as Loeffler's syndrome would not therefore be encountered.

(6) *X ray of chest.*—Loeffler's description of his radiological findings is embarrassingly comprehensive. He describes shadows "in any position and of any size, of variable structure, homogeneous or more frequently patchy or cloudy, more or less sharply circumscribed, single or multiple, unilateral or bilateral." His "type E" appears to be similar to the condition described in tropical eosinophilia by Weingarten. The transience of the shadows is emphasised by Loeffler, but in his own cases they sometimes took more than a fortnight to resolve, and in Parkes-Weber's case the shadow had not completely cleared in fifteen days. In tropical eosinophilia Weingarten says that "the mottling rarely lasts more than four weeks," but in Emerson's case the shadowing had actually increased after three months, and was beginning to clear a month later after arsenical treatment had been started. In cases of tropical eosinophilia seen after the early stages there is no mottling or shadowing, and the diagnosis depends largely on an X-ray finding of chronic bronchitis in association with eosinophilia.[4] Thus, from the mildest case of Loeffler's syndrome to the most severe cases of tropical eosinophilia, there is a gradation in the duration of the shadow.

(7) *Response to treatment.*—The number of cases of Loeffler's syndrome in which some degree of eosinophilia has persisted is not known, but in the 2 cases where undue persistence was recorded [5 6] arsenical treatment was not employed.

DISCUSSION

The ætiology of both syndromes is unknown. Loeffler tends to the conclusion that his syndrome is an allergic manifestation. Weingarten is unable to accept such an interpretation of his cases; yet there are many features in common between chronic asthma and tropical eosinophilia, and Emerson's case [7] had an allergic history. The cure of tropical eosinophilia with arsenic is suggestive of a parasitic infection (worms, spirochætes, protozoa, &c.) which of itself might produce allergic phenomena.

The association of two such findings as pulmonary infiltration and eosinophilia is so striking that its occurrence in two completely unrelated diseases appears inherently improbable. The comparisons made above suggest that there are many similarities and gradations between Loeffler's syndrome and tropical eosinophilia, and that the distinctions between them are not clear-cut.

Our own case illustrates the difficulties which may arise in attempting to differentiate between them. It is unfortunately, complicated by the skin condition. That this is nothing more than a complication is evinced by the facts that when the patient came under our observation a considerable degree of eosinophilia was present though only a trace of the skin lesion persisted, and that the eosinophilia rose after his attack of bronchitis. The development of pulmonary infiltration while he was in a humid, tropical climate, the subsequent course of the disease, and the presence of a considerable eosinophilia long afterwards, suggested a diagnosis of tropical eosinophilia, although this was not clinched by a blood examination at the onset. The absence of splenic enlargement and the spontaneous and well-marked fall in the eosinophil count are more in line with Loeffler's syndrome. It is, however, our contention that such a differentiation is superfluous and not in keeping with the facts.

SUMMARY

In an Englishman returning from Bengal with a history of cough with wheezing and a transient pulmonary infiltration, a considerable eosinophilia was found.

The eosinophilia increased after an attack of acute febrile bronchitis in England.

A close relationship between Loeffler's syndrome and tropical eosinophilia is demonstrated, and it is suggested, from this and other cases, that the two conditions are not clearly distinguishable.

We wish to thank Wing-Commander P. J. McNally for his encouragement, and Sgt. C. H. Collins and Cpl. G. H. Hutchinson, our laboratory technicians, for their help.

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NOTE ON SCALP CLOSURE

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ARISING from the present team-spirit in surgery it has been suggested from the neurosurgical side that a short note on wounds of the scalp from the plastic angle might be of some value. Every specialty should give what help it can to other branches of surgery. I have no experience whatsoever of the closure of scalp wounds when these are connected with an underlying skull or brain injury; but small and large defects of the scalp itself offer a constant problem to the plastic surgeon, and some of the principles he adopts may be usefully employed by others. It is quite definite that in many of the writings of neurosurgeons the principles by which plastic surgeons obtain their results are not always appreciated. On the other hand, in these same writings are many principles which appear to be perfectly sound, such as the original tripod incision,[1] and in no surgery is better suture work done than by neurosurgeons.

1. The object of all scalp closure is to provide perfect aseptic healing of the wound. This is all the more imperative if a lesion of the cranium lies subjacent to the wound.
2. If any tension is produced in resuture, as invariably happens when there is partial loss of scalp, primary healing is jeopardised and the value of cranial surgery endangered.
3. To circumvent such tension cranial surgeons have at all times adopted some form of plastic procedure. The principle should be to cut a flap or flaps in such a way as to relieve all tension at the point of danger (PD) and to distribute it over the area of no importance (ANI). *The longer and larger the incisions the more easily can tension be distributed over the non-important area of the scalp* (fig. 1a and b).

METHODS RECOMMENDED

Three types of plastic closure are advised :—

1. The sliding rotation flap, the method of choice (figs. 1–5).
2. The curved tripod (figs. 6–9).

The principles in both are the same, but an advantage of the sliding rotation flap is that the line of suture is single and does not lie directly over the cranial defect, whereas the tripod flaps give a triangular line of suture over the centre of the cranial defect.

3. Relaxation incisions.

These are useful for prevention of tension in *linear* defects. If the relaxation incision is resutured it ceases to be a relaxation incision. From a theoretical point of view it is interesting to observe that relaxation incisions, in fact, create a double-pedicle flap which is transposed in the desired direction (fig. 10).

Rotation flaps.—Various incisions for rotation flaps are indicated in the figures. In fig. 1(*a*) in which the defect is triangular, the incision from point A is curved in general, and when sufficiently far from the wound is curved more acutely so that it reaches a theoretical prolongation of the line C B at E. This will enable A to be sutured to C without any tension, while such tension as there is occurs in the distant part of the wound (fig. 1 (*b*)). This manœuvre is practical in almost every situation on the scalp, and it may be placed in any direction regardless of special blood-supply. Scalp flaps "never die" nor are they prone to "fade away." The longer the line A D E the farther is the area of non-importance placed from the point of danger. The end of this incision A D E should reach a line theoretically prolonged from the side of the triangle C B. One of the easiest ways to design this type of rotation flap is first to decide which side of the triangle A B C is to make the flap. This will usually be on that side of the defect bordered by the most scalp; then choose in which direction the flap is to be cut. Here some consideration of the normal blood-supply may be of value. Make a mark-point, D, in line with C B and about at least twice the length of C B away from point B. Then make the curved incision from A to D. If any tension still persists over the danger area, it is desirable to make a further extension of the incision from D to E as in fig. 1 (*a*); this manœuvre might well be left until it is found to be necessary, but in nearly all cases it is not only safe but desirable to do it. Even if this incision only nicks the galea, a very distinct relaxation effect is produced at the end of the flap. In all plastic surgery conflict between blood-supply and perfection of result is a constant factor. The flaps illustrated in the figures, however, are perfectly safe.

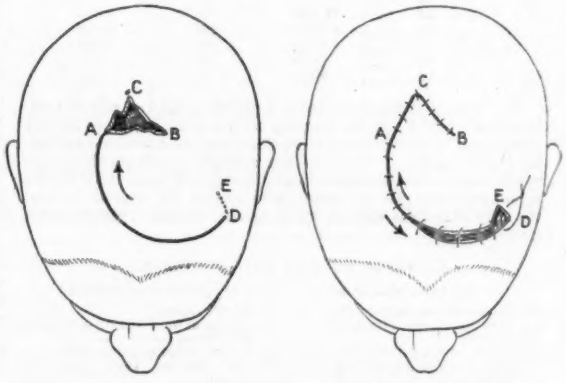


Fig. 1—(*a*) Single rotation flap. Note optional extension from D to E. (*b*) Result with no tension over danger point. Tension distributed over area of no importance.

1. Cushing, H. (1918) *Brit. J. Surg.* **5**, 558.

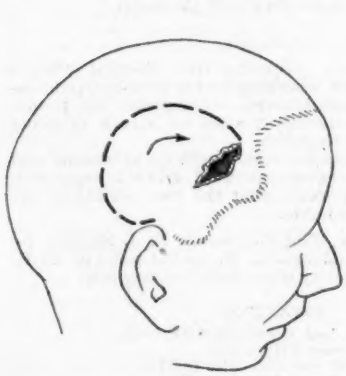


Fig. 2

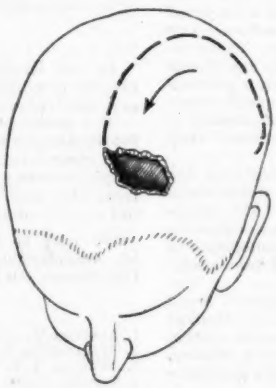


Fig. 3

Designs for rotation flap.

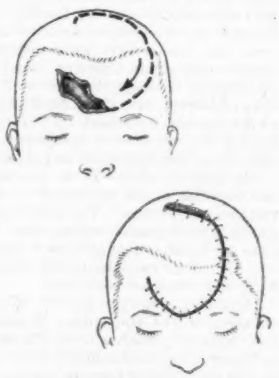
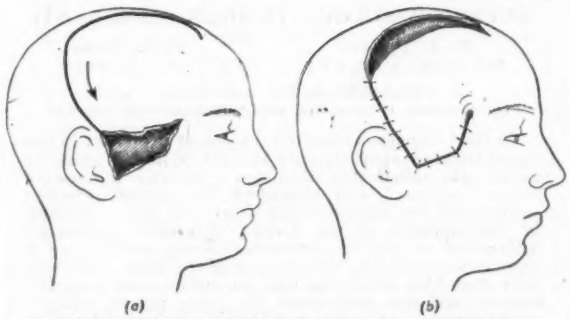


Fig. 4—Defect of forehead. Rotation flap includes hairy and non-hairy scalp. Hair-line lowered unilaterally.



(a) (b)

Fig. 5 (a)—Subtemporal wound. Design for flap. (b)—Suture of flap.

Curved tripod or Isle-of-Man flap.—The relation between the rotation and the tripod is that in the latter all three sides of the triangle are mobilised as short rotation flaps; each one, however, only slides to the mid-point of the defect so that there is less secondary area of tension in each of the three incisions. In fact, by the addition of the length of the three incisions together, the tension may be said to be distributed over a very long line, similar in fact, or even greater, than in a large single rotation flap. The word tripod is somewhat of a misnomer indicating, as it does, straight legs (fig. 6). The correct incision has aptly been likened to a modified Isle-of-Man crest. Each leg of the tripod must be curved and each in the same direction (fig. 7). The best way to get this into one's head is to draw a triangle on paper, then draw a curved line from one point, turn the paper round to the next point and do a similar curve, and so on to the third point, otherwise it may be found quite easy to make one of the curves in an opposite direction, which would not be to anyone's advantage (fig. 8). It should further be noted that the extremity of the incision should have a little kink, like a dog's tail, as in D–E in the single rotation flap. Examples of suggested designs are illustrated.

A straight advancement flap is one stage worse in principle than a straight-legged tripod, while there appears to be no value in perpetuating the complicated and useless fleur-de-lys flaps. Although the principles of rotation have been set forth in these examples, there are many situations in which individual variation is required. When, for instance, a wound is near the non-hairy forehead, it surely is unnecessary to cut the forehead. On the contrary, when the wound is in the hairless forehead (fig. 4), a rotation flap can often be designed to give a good cosmetic result with only slight lowering of the hairline on one or other side. It is surprising how little patients mind the change in level of hairline—forwards! Should the defect at ANI be considerable, as may happen when a large loss of scalp is being dealt with by a rotation flap, it may safely be left to epithelialise or be skin-grafted (Thiersch). Thus when a scalp defect is present in front, a very common procedure in plastic surgery is to rotate or transpose a hairy flap forward and skin graft the resultant raw area whence the flap has come. Practical difficulties, particularly in the matter of exposure, may arise in cranial surgery in the use of these rotation flaps, but they are simple and quick to perform.

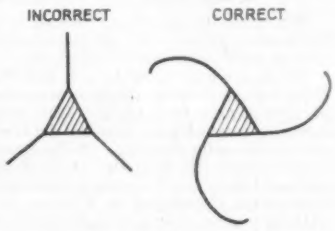


Fig. 6.

Hæmostasis.—It is strongly urged by the neuro-surgeons, with whom the writer agrees, that every precaution should be taken to minimise the loss of blood in any plastic procedure in acute head injuries. It is the last straw that kills the camel. Not only should the entire area be infiltrated with procaine and adrenaline, but centrifugal pressure should be applied by the hands of the assistant on either side of the incision until such time as the surgeon can pick up the bleeding-points and turn the edge over. By this means it is possible to do quite a large plastic without any loss of blood. A most useful pressure is one on the temporal artery when that area is involved. Similarly, supra-orbital pressure—the assistant pressing downwards as well as backwards—is useful when the forehead region is involved. Temporary circular rubber scalp tourniquets can sometimes be applied to great advantage. Finally the best way to stop bleeding from the scalp is to sew it up.

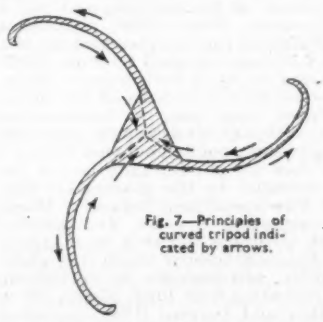


Fig. 7—Principles of curved tripod indicated by arrows.

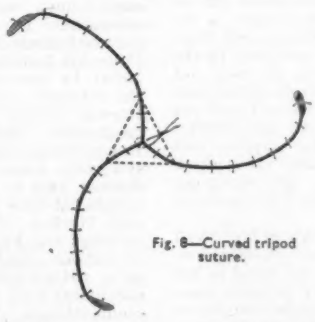


Fig. 8—Curved tripod suture.

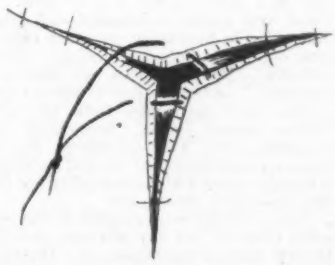
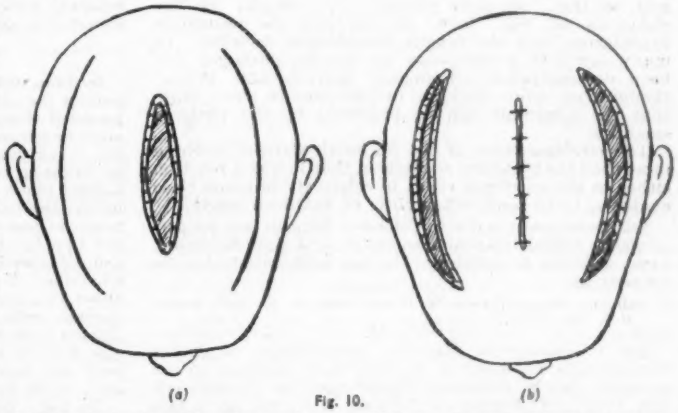


Fig. 9—Method of closure of curved tripod.



(a) (b)

Fig. 10.

(a) Relaxation incisions. Note these are longer than wound. (b) Suture of wound.- Relaxation incisions unsutured.

OUTBREAK OF PNEUMONIA IN SMALLPOX CONTACTS

HENRY T. HOWAT
M B ST. AND., M R C P
MAJOR RAMC

W. MELVILLE ARNOTT
B SC, M D EDIN., F R C P E
LIEUT.-COLONEL RAMC

WE wish to place on record a curious outbreak of pneumonic illness in circumstances suggesting a connexion with exposure to smallpox.

While we were serving in a base hospital in the Middle East, a patient with smallpox was admitted on the 4th day of illness and died on the 12th with confluent lesions; autopsy revealed no unusual features, and in particular no specific lung changes. Subsequently 7 of the hospital staff became ill—5 of the medical officers who examined him and 2 of the 3 nursing orderlies who attended him. Symptoms developed in 6 cases between the 11th and 14th day after first seeing the patient, and in the remaining case on the 18th day. All these officers and orderlies had been repeatedly vaccinated (5 immediately after seeing this particular patient with smallpox) and all had shown immune reactions.

Clinical features.—The onset was insidious with increasing malaise, followed in a few hours by dull frontal headache, general aching, feeling of chills, and sweating. Prostration was variable, several remaining on duty for the first 3 days. Catarrhal symptoms were absent, cough was infrequent and unproductive, and then present only after several days. The febrile reaction lasted 4 to 12 days and reached 100° to 104° F.; defervescence was by lysis. Physical signs in the chest were scanty, inconstant and delayed for several days, consisting in migratory crepitant râles not restricted to the site of the radiological lesions. There was no rash nor eruption. Neither spleen nor superficial lymph-nodes were enlarged. Leucocyte counts ranged from 8400 to 11,000 per c.mm., with monocytes from 420 to 770 and granulocytes within normal limits. Serological tests for typhus and undulant fever were negative. The two early cases which received sulphapyridine showed no response. The illness ran a benign course with no mortality nor sequelæ. Convalescence was somewhat protracted.

X-ray changes were evident in the lung fields in 6 of the 7 cases from the 3rd day onwards, and in 2 they persisted into the 6th week of convalescence. Briefly they consisted in fine diffuse mottling usually in the lower lobes; in some cases better defined aggregations, two or more in number, showed as rounded shadows in the middle and lower zones of both lungs. The site of these multiple lesions could be peripheral or central. The hilar shadows were moderately enlarged.

Though febrile reactions constituting *formes frustes* are well recognised in smallpox contacts, our limited search has revealed no reference to pulmonary complications. The conditions we observed did not seem to be an allergic reaction, and in most important respects the outbreak corresponded to the "virus pneumonias" associated with psittacine infection, lymphocytic choriomeningitis, influenza and chickenpox, and the mongoose-infecting virus described by Horsfall and Weir, and to the "atypical pneumonias" caused by the rickettsiæ of "Q" fever (*R. burneti*), the protozoon toxoplasma, and the fungus *Coccidioides immitis*. In many atypical pneumonias no specific pathogen has been demonstrated. Reimann, Havens and Price,[1] though they quote no cases or reference to cases, state that the syndrome can be produced by the virus of smallpox.

The circumstances of the outbreak warrant nothing more than the tentative suggestion that it was a reaction either to the smallpox virus, in relatively immune close contacts, or to some other virus of unknown origin.

Acknowledgment is due to Colonel J. Biggam, MB, for permission to publish this record, and to Major J. A. C. Flemming, RAMC, specialist in radiology, who has been consulted in its preparation.

1. Reimann, H. A., Havens, W. P. and Price, A. H. *Arch. intern. Med.* 1942, **70**, 513.

The CZECHOSLOVAK MEDICAL ASSOCIATION IN GREAT BRITAIN asks all members to send their addresses to the secretary, Dr. E. Sevcíková-Wachsbergerová, Czechoslovak Red Cross, 35, Porchester Terrace, W.2. An up-to-date list is necessary for the organisation of the medical service in liberated Czechoslovakia.

SUPERIOR SULCUS TUMOUR (PANCOAST)

B. A. DORMER
M D DURH., D P H, T D D

F. J. WILES
M B CAPE TOWN

J. FRIEDLANDER, M B CAPE TOWN, D P H
KING GEORGE V HOSPITAL FOR TUBERCULOSIS, DURBAN

IN 1924 Pancoast reported 3 cases of neoplasm in the upper thoracic aperture, and in 1932 he added 4 similar cases. He called this condition "superior pulmonary sulcus tumour," and described five characteristics: pain round the shoulder and down the arm; atrophy of the muscles of the hand; Horner's syndrome; infiltration of ribs or vertebræ; X-ray evidence of a homogeneous shadow at the apex of the lung. Pancoast held that this condition was an entity, and that the tumour did not arise from the lung, pleura, ribs or mediastinum. He suggested that it originated from an embryonic remnant of the fifth branchial cleft. About 70 additional cases fulfilling Pancoast's criteria have since been reported, but most workers do not support Pancoast's contentions.

Tobias (1932) reported 5 cases, 4 being primary carcinomas of the apex of the lung, and the fifth a secondary growth from carcinoma of the stomach; Jacox (1934) reported one case, an adenocarcinoma of bronchogenic origin; Steiner and Byron (1934) reported 3 cases, all primary apical lung carcinomas; Browder and De Veer (1935) described 5 cases, 3 primary lung carcinomas, one a tumour of the thymus, and one a metastatic hypernephroma; Frost (1936) reported a sympathoblastoma producing the symptomatology of a Pancoast tumour. Of 15 cases reported by Stein (1937, 1938), 14 were considered to be of bronchogenic origin, the fifteenth a metastasis from a sarcoma of the femur. Barton (1938) described one case, a bronchogenic carcinoma. Moersch (1940) and his associates, reporting 17 cases from the Mayo Clinic, pointed out that Horner's syndrome sometimes does not develop until late in the disease and is not essential to the diagnosis; they concluded that most were apical lung tumours. Morris and Harken (1940), reporting 8 cases, distinguished between the Pancoast syndrome, initiated by a variety of tumours, and the Pancoast tumour which they claim as a pathological entity, histologically an epidermoid carcinoma and not originating from lung, pleura, rib or mediastinum. Melnikov and Derman (1940) presented 3 cases and consider that the Pancoast tumour originates in the branchial clefts, while the Pancoast syndrome is caused by (*a*) apical lung cancer; (*b*) sympathoblastoma; or (*c*) metastases in the supraclavicular lymph-glands. This view is the most acceptable, although proof of a tumour arising from the branchial clefts is still lacking. Of Hall's (1940) 5 cases, 2 were metastatic tumours, 2 primary lung tumours, and one of doubtful origin. He concludes that "there is no specific tumour in the apex of the lung which will give characteristic signs and symptoms to the exclusion of other types of cancer."

All agree that the prognosis is hopeless. Surgical removal is impossible owing to infiltration of surrounding structures, and irradiation is without effect.

CASE-REPORT

In June, 1941, a European male clerk, aged 44, developed pain in the right shoulder which became steadily worse and persisted throughout the illness. About 6 weeks after the onset he noticed that his right hand became blue at intervals. His doctor diagnosed phlebitis. A month later he developed an irritating cough with no sputum. In October, 1941, he noticed ptosis of the right eyelid. Despite these symptoms he was able to continue at work until January, 1942, when he began to feel numb down the inside of his right arm. We saw him for the first time a week later, when he looked ill and emaciated, having lost about 30 lb. weight in the past 6 months. Temperature and pulse were normal. A swelling about 3 in. in diameter could be seen and felt above the right clavicle, with its medial edge under the sternomastoid. Dilated veins were present above and below clavicle. There was dullness and increased vocal resonance at right apex, back and front. A radiogram showed an opacity at the apex of the right lung.

He had: complete Horner's syndrome on the right side, with ptosis, myosis, enophthalmos and anhidrosis; diminished sensation over the inner side of the lower half of the right arm

the inner side of the forearm and hand, the 5th finger and medial half of the 4th finger; weakness of flexors of fingers of the right hand; and wasting of interossei of the right hand.

Hb. 100%; white cells 6000 per c.mm. (polymorphs 65%, lymphocytes 31%, large mononuclears 4%). Sedimentation-rate (Cutler) 6 mm. in 1 hour.

Complete recurrent laryngeal paralysis was found on the right side; he was not hoarse, but admitted that for the past 2 months he had been unable to shout loudly or sing, though previously an enthusiastic singer. There were no other positive findings and no symptoms to suggest malignant disease elsewhere in the body.

After a period of observation it was decided to perform an exploratory thoracotomy. At the operation a growth was found at the upper aperture of the chest, densely adherent to the apex of the lung. A piece was removed for biopsy, the tumour being obviously inoperable. The day after operation the patient suddenly developed a spontaneous pneumothorax, and despite the aspiration of large amounts of air died within an hour.

It was unfortunately not possible to perform an autopsy and find the exact nature and origin of the tumour; the only clue is the following report by Prof. J. B. Duguid, of the Welsh National School of Medicine, on the biopsy specimen.

Three sections from the lesion have been examined. One consists of fibrosed lung and pleura without any tumour; the other two consist of masses of connective tissue with fat, nerve-fibres and lymph follicles, infiltrated by carcinoma. The carcinoma forms small, loosely packed masses of cells extending irregularly through the spaces in the connective tissue. Its cells are quite undifferentiated, spindle-shaped and polygonal, and mostly three or four times the size of lymphocytes. They have relatively large, dark-staining nuclei and their cytoplasm appears dense so that their outlines are sharply defined. In some places they are evenly separated from one another by narrow intercellular spaces which call to mind a squamous cell tumour, but no "prickle-cells" are to be seen. In other parts the cells are quite loosely and irregularly arranged. It is impossible from the material available to determine the origin of this tumour, but its general structure is not unlike that sometimes seen in carcinomas of the bronchi.

COMMENT

This case presents the classical Pancoast syndrome with pain in the shoulder, Horner's syndrome and pressure on the ulnar nerve. There was no radiological sign of bony involvement. The chief point of interest is the involvement of the right recurrent laryngeal nerve. We have been unable to find a previous report of this feature associated with the Pancoast tumour.

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Medical Societies

SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT a meeting of the fever group on June 30, with Dr. ANDREW TOPPING in the chair, a discussion on

Penicillin

was opened by Sir ALEXANDER FLEMING, FRS, who demonstrated graphically blood-levels and rate of disappearance of penicillin after administration by various routes. He also described the slide-cell and the capillary-culture methods of estimating penicillin content of the blood by bacteriostatic tests.

Dr. A. DOLPHIN gave an account of 10 cases treated at the North-Western LCC Hospital. These included 6 cases of puerperal septicæmia, of which 3 were due to anaerobic streptococci, 2 to *Staph. aureus* and 1 to *Strep. hæmolyticus*; 3 cases of suppurative meningitis, of which one was caused by the *Strep. hæmolyticus* and the others by pneumococci; and an infective endocarditis due to *Strep. viridans*. In each instance the causative organism was isolated and proved to be penicillin-sensitive. In all three anaerobic streptococcal septicæmias there were lung complications on admission; after two days' treatment with penicillin, blood-cultures became negative and there was decided clinical improvement. The improvement was not maintained although the blood remained sterile, and 2 of the patients died from multiple lung abscesses, the third from intestinal obstruction due to multiple peritoneal adhesions. This third patient gave a strongly positive Wassermann reaction in the blood and cerebrospinal fluid before penicillin administration; thereafter the blood reaction became almost negative but the CSF reaction remained strongly positive. At no time was the drug detected in the CSF. The first patient with *Staph. aureus* septicæmia had mitral stenosis, hæmaturia and skin petechiæ. The blood became sterile after two days' penicillin treatment, but the patient died 11 days later from uræmia, confirmed at autopsy by the presence of chronic nephritis lesions. The other patient was treated on the 9th day of disease and after a first course of 790,000 units she relapsed and two further courses were necessary before recovery. The *Strep. hæmolyticus* septicæmia was treated on the 12th day of disease. She recovered but was left with permanent valvular heart damage, probably well advanced before treatment was begun. The hæmolytic streptococcal meningitis case, an infant of 5 months, received treatment on the 8th day of disease. The drug was given intrathecally, intramuscularly, and, after bilateral mastoidectomy, into the mastoid wounds. The CSF became sterile but subarachnoid block developed and signs of local cerebral irritation. The mastoid wounds were reopened and the brain unsuccessfully needled for pus. Of the 2 cases of pneumococcal meningitis, one had severe septicæmia on the 29th day of disease and subarachnoid block when admitted for treatment. Penicillin was given into the cerebral ventricles, cisterna magna, spinal theca and intramuscularly. The blood became sterile but the meningitis did not respond and he died on the third day of treatment. Autopsy was refused. The second pneumococcal meningitis case likewise did not respond to penicillin owing to extensive subarachnoid block, confirmed at autopsy. Treatment of the *Strep. viridans* septicæmia was begun on the 4th day of disease when the patient appeared to be dying. After 24 hours on penicillin the blood was sterile, the temperature normal and the general condition considerably improved. Subsequent blood-cultures were sterile and so far the patient has remained free from relapse. All the septicæmias, except the last case, were treated by intermittent intramuscular injections of 15,000 units of penicillin, with intravenous injections initially in a few cases. The injections were given three-hourly at first and therapy was stopped gradually, either by lengthening the intervals between injections or reducing each dose. The last case was treated by continuous intravenous drip, 100,000 units in 24 hours; treatment lasted 13 days and was stopped suddenly. A constant blood bacteriostasis was maintained but the method has had the serious disadvantage that thrombophlebitis is a common occurrence and all the available veins may be used during a long course of treatment. A falling pulse-rate is a more reliable guide to successful therapy than the temperature, since fever often increases when penicillin is first given. The earliest signs of success are better appetite and sleep, and relief of pain and malaise. Occasionally the blood-urea rises during therapy, and a falling white-cell count if originally high, or a rising count if originally low because of previous sulphonamides, are favourable signs.

Dr. WILLIAM GUNN (LCC) suggested that the results appeared worse than the clinical facts indicated; all three anaerobic streptococcal cases were very toxic and obviously bad risks and two of the three meningitis patients were moribund on admission. More generous dosage, preferably using a continuous method, would

probably have yielded better results. Intermittent administration with consequent intermittent bacteriostasis and gradual withdrawal of the drug may conceivably induce drug resistance as Schmidt and Scaler showed experimentally with pneumococci in mice (*Proc. Soc. exp. Biol. N.Y.* 1943 **4**, 353). The last case described, a bad risk, was treated by the intravenous route, the drug then being suddenly withdrawn, with conspicuous success. A similar method was used successfully in a more recent case of staphylococcal septicæmia after mastoidectomy, not included in this series. Only extreme scarcity of the drug can justify inadequate dosage; underdosage is liable to prove uneconomical in the long run, as the fifth case, which required three courses of treatment, indicated.

Dr. J. M. ALSTON (LCC) described the case of an elderly man with an anaerobic streptococcal septicæmia which responded repeatedly, though temporarily, to intravenous injections of a crude preparation of penicillin. He was struck by the immediate clearing of the mental condition in desperately ill patients after quite small doses. In animal experiments he had found *Leptospira icterohæmorrhagiæ* sensitive to penicillin, but treatment of affected guineapigs had to be undertaken early and with big dosage.

Dr. ROBERT CRUICKSHANK (LCC) stressed the value of *quantitative* blood-culture in the prognosis of generalised infections. For example, in staphylococcal infections an increase in the bacterial count from 20 to over 100 organisms per c.cm. of blood within 24 hours meant a grave prognosis. Staphylococcal septicæmia was often complicated by renal damage which resulted in a reduced excretion of penicillin so that the drug could still be demonstrated in the blood 6–12 hours after the standard intramuscular dose of 15,000 units. The outstanding feature at autopsy in the patients with anaerobic streptococcus septicæmia was the multiple lung abscesses secondary to the primary septic thrombophlebitis in the pelvic veins. If these infections could be diagnosed and treated early, he was sure that penicillin therapy would be effective.

Reviews of Books

Methods of Treatment

(8th ed.) LOGAN CLENDINNING, MD; EDWARD H. HASHINGER, MD. (Kimpton. Pp. 1033. 50*s*.)

"REST and surgery are the most effective therapeutic methods the modern physician has to offer a patient." Any textbook of therapeutics opening with this challenging statement rouses nostalgia for the spacious days when a review could develop into an essay. This book is sound and, making allowances for national differences, in general accord with modern teaching in this country. It has the virtues as well as the vices of current textbooks on therapeutics. Thus it is comprehensive, devoting an entire chapter to anæsthetics and dealing in considerable detail with such minor operations as hypodermic injections; it contains all sorts of out-of-the-way information, and is based largely on the author's large clinical experience. Reference to published work is adequate; it is reasonably up to date and clearly written. There is some tendency to digression—for instance, a discussion of the ideal poison. On the debit side it may be noted that in the treatment of hæmatemesis the Meulengracht diet is never mentioned; atropine does not appear in the list of drugs used in the treatment of peptic ulcer, though the parenteral injection of milk is recommended; the sulphonamides are damned with faint praise in the treatment of cerebrospinal fever, and not even mentioned in the treatment of acute tonsillitis and otitis media; and the list of cathartics occupies 2½ pages. But though unbalanced in parts, this work is a worthy reference book for the hard-pressed practitioner.

After Treatment

(2nd ed.) H. J. B. ATKINS, DM, MCH OXFD, FRCS. (Blackwell Scientific Publications. Pp. 311. 18*s*.)

HERE is a trustworthy and interesting guide for every member of a surgical team, from the surgeon himself to the general practitioner who is more and more becoming one of the team. Much of its information could perhaps be found elsewhere, though in not less than a shelf-full of textbooks and reprints, but Hedley Atkins has set it down simply as well as conveniently and has infused it with his own optimism and occasional flashes of humour. This edition, finished in October, 1942, has not lost anything by waiting its turn for paper and printers. It has been improved by the addition of chapters on aftercare in children and on rehabilitation, sections on postoperative coronary thrombosis and the surgical problems of diabetes, and new material on head-injuries and genito-urinary surgery; the next edition might well include a section on transfusion technique.

Puzzle: What is wrong with fig. 26? *Answer*: Tape-measures read from left to right.

Dorland's Medical Dictionary

(20th ed.) Revised with the collaboration of E. C. L. MILLER, MD. (Saunders. Pp. 1668. Plain 42*s*., thumb-indexed 45*s*.)

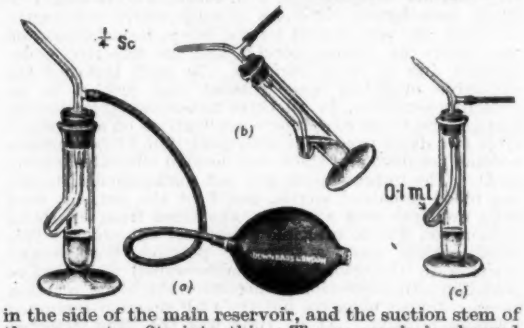
IT is six years since we reviewed the American Illustrated Medical Dictionary (to give its full name) by Dr. W. A. Newman Dorland, one edition having failed to reach us, and we welcome the "complete revision" which has added new words in every department of medicine (especially war medicine and surgery) and names of new synthetic drugs, while bringing the terminology into conformity with the AMA's "Standard Nomenclature" (E. O. Jordan). Scholarly, accurate and comprehensive it remains—and has only grown by 67 pages, being still "a volume of handy size." Nearly all the slips noted in 2000 days of use have been corrected, but we would like our learned friend to make up his mind about the meaning of autograft, homograft and heterograft, and to follow the guidance of the National Formulary in abandoning the incorrect use of hyposulfite for thiosulfate. The constant reader will find three extra shillings well spent on a thumb index.

New Inventions

DOSIMETRIC SPRAY FOR PENICILLIN SOLUTIONS

THE spray here depicted was devised by Messrs. Down Bros. Ltd. at my request to fulfil the following requirements. It was to be well-adapted for spraying the surface of the skin, made entirely of glass except the cork, the bellows and the bellows-tube, and designed so that the operator could measure with reasonable accuracy the amount of fluid he was using. The spray was intended to ensure economy and control of penicillin solutions when used in the treatment of skin diseases by the technique which, in the Army, has been developed by Majors K. E. A. Hughes and P. H. Taylor.

The spray is made on the usual principles except that a small reservoir holding 0·1 ml. of fluid is incorporated



in the side of the main reservoir, and the suction stem of the apparatus fits into this. The reservoir is charged with fluid in the usual way (*a* in figure). Immediately before use the spray is tilted so as to allow the solution to pass into the accessory reservoir (*b*). The syringe is then held upright, when the required amount of fluid is retained in the accessory reservoir (*c*), from which it is delivered by squeezing the rubber bulb some six or more times until the reservoir is empty.

This is obviously not an instrument of precision, but it is, nevertheless, a useful device for clinical work. Its design will probably be slightly modified from time to time in the light of experience, but the fundamental principle is likely to remain unaltered.

R. M. B. MACKENNA, MD CAMB., FRCP, Brigadier.

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LONDON: SATURDAY, SEPTEMBER 2, 1944

Traumatic Paraplegia

AMONG serious war injuries traumatic paraplegia—whether by gunshot wound, fall or crushing—holds a prominent place. The paraplegias resulting from such injuries fall into two main groups: upper-neurone paraplegia due to injury to the spinal cord; and lower-neurone paraplegia due to injury to the cauda equina or conus medullaris. In both forms bladder function may be disturbed. A recent supplement to the *Army Medical Department Bulletin*[1] draws attention to the importance of adequate first-aid and early treatment of such paraplegias. Injuries of the spine are often associated with injuries of other parts, which at first may mask the paraplegia. Among these are head injuries with cerebral concussion or contusion, fracture of the pelvis, and multiple wounds—including those of viscera or blood-vessels—by penetrating missiles. In general, the stability of the spine is much less impaired by gunshot wounds than by fracture-dislocations. Some deformity is usually noticeable with the latter, except in certain cases of injury to the cervical portion of the spine where the fracture-dislocation has undergone spontaneous reduction.

Extreme care must be taken in lifting and moving a patient suffering from traumatic paraplegia and on no account must the spine be flexed, rotated or hyperextended at the site of injury, owing to the risk of further damage to the spinal cord or cauda equina. The consensus of opinion favours transport of cases of spinal injury in the supine position. This is the basic principle of the Clarke-Moir method of transportation.[2] The natural contour of the spine must be maintained as far as possible and, if necessary, appropriate small pillows or pads are inserted beneath the lumbar and cervical curves. No movements of flexion or hyperextension of the spine must be permitted during the lifting of the patient. Full first-aid instructions have been given recently in our columns by MOIR.[3] The prevention of pressure-sores—especially in the sacral and trochanteric regions—needs extreme vigilance. When the injured man is laid on the stretcher, care must be taken that neither his clothes nor his blanket are wrinkled during transportation, and that his position on the stretcher is very slightly altered every hour or so. When he reaches the wards first-class nursing is his only safeguard against a disaster which may delay operation indefinitely, long past the optimum period.

The care of the paralysed bladder is even more important. Suprapubic drainage should be carried out as soon as adequate surgical facilities are available. The Army recommendations[1] include transverse abdominal incision between the umbilicus and the pubis, the opening in the bladder being made under direct view as high as possible. A Malecot catheter is then run down obliquely from skin to bladder. Some may prefer, however, the method advocated by RICHES[4] by which a small suprapubic catheter is introduced without dissection. If anæsthesia is necessary local infiltration is sufficient; the needle with which the anæsthetic is injected, taking the track to be followed by the introducer, is pushed into or through the anterior bladder wall while the injection is being made. The introducer is a steel trocar with a small knife-blade at its lower end which can be opened and closed by a screw at the upper end; the back of the blade grips the catheter (a no. 16 Malecot type) which is stretched on the trocar to obliterate the self-retaining wings. The instrument is introduced at the highest point of bladder dullness or at the midpoint between the umbilicus and the symphysis pubis, and its direction is downwards and backwards to make an angle of 45° with the skin of the abdominal wall. When introduced, the catheter is gripped firmly by the abdominal wall and another instrument is necessary to push it further into the bladder. This "advancer" has a spring-controlled expansion at its lower end and is ½ in. shorter than the catheter. It is inserted into the catheter and expanded to grip the wall; the catheter is then pushed to any desired depth, usually about 5 in. into the bladder, the catheter being marked in inches—2 in. to 5 or 6 in. from the tip. A rubber shield with fully curved tube is threaded over the catheter and fixed by strapping to the skin to prevent accidental withdrawal. After two days the catheter is connected to a tidal-drainage apparatus which is retained as long as necessary; RICHES describes the method fully, and claims that it is simple and rapid, permitting the introduction of a small drainage-tube which will overcome the difficulties of the initial stage of retention; it usually suffices until function is recovered, when the small opening will close quickly. Provided the tidal irrigator is kept in clean working order, the method is efficient and time-saving. There is no leakage, and the advantages of tidal drainage are obtained without the disadvantages of a urethral catheter; moreover, it does not interfere with treatment of the spine.

Until the patient reaches a unit where surgical facilities for suprapubic catheterisation or cystotomy are available, the following procedure is advised:

> The bladder can be left for 24 hours if it does not reach higher than half-way between pubis and umbilicus, and if distension is not causing severe pain. Owing to the risk of infection, every endeavour should be made to avoid urethral catheterisation. If it is essential after 24 hours on account of pain, and full surgical facilities are not available, urethral catheterisation must be done with strict antiseptic precautions. Drainage by tied-in catheter or manual expression, applied to the full bladder, should never be used. Since an "acid cystitis" is usually more easily controlled than an "alkaline cystitis" an attempt may be made to keep the urine slightly acid by giving ammonium benzoate (grains 10–15) or acid sodium phosphate (gr. 30–60) in water thrice daily. Finally, as a precautionary measure against urinary infection 1 gramme of sulphanilamide with water every 6 hours is advised for a period of 5 days.

Care of the bowel must also be thorough, especially with injuries in the upper thoracic region, which may be associated with abdominal distension from paralysis of the bowel. A turpentine enema may be given, at the same time as 1 c.cm. pituitrin subcutaneously, and a firm enema tube left in the lower bowel after it has been inserted as high as possible by gentle manipulation. A soap-and-water enema every

1. *AMD Bulletin*, April, 1944, Supplement No. 13.
2. Moir, J. L. *Brit. med. J.* 1942, ii, 529.
3. Moir, J. L. *Lancet*, 1944, i, 739.
4. Riches, E. W. *Lancet*, 1943, ii, 128; *Brit. J. Surg.* 1943, **31**, 135.

second morning completes the toilet, and a mixture of liquid extract of cascara, 1–3 drachms, and liquid paraffin, 1 oz., is administered each night. The symptoms resulting from inadequate care of the paralysed bladder and bowel are well exemplified by the experiences of a wounded soldier, evidently observant and resourceful, whose descriptions[5] are good. In the Libyan campaign he sustained a wound of the cauda equina with resulting paraplegia. After the second day he had considerable trouble from bladder-retention, with overflow and hæmaturia; he was catheterised repeatedly. His final remark on this aspect of his case is significant: "They sank a suprapubic; no trouble after that with the bladder."

So much for what we can do for the patient; it is also worth considering what he can do for himself, and this is more than might at first be supposed. To sustain an injury causing paraplegia is necessarily a severe emotional shock. From the patient's point of view probably the worst aspect of his state is incontinence. To lose control of elementary functions and to stink of excreta is a profoundly humiliating experience: as one man put it, "It calls your last bluff." Anything which can help him to manage his paralysed bladder and bowel, even if he cannot recover sensory control of them, will give him back self-confidence and help him to tolerate his lot. Some fall into a despairing lethargy, a defence against inroads on their depleted strength. In this apathetic state they relinquish their whole care to their nurses and doctors, and after a few months may drift idly into death. Yet if they can be stimulated to make the effort many can come to understand and manage their condition better, to their physical and mental advantage. The paralysed bladder can be made to contract by the use of local reflexes. The man should be taught these by his doctor, and must experiment for himself until he finds the most effective method of exciting contraction. Rapid scratching on the inner surface of the thighs, friction or tickling of the thighs, scrotum or perineum, may all provoke reflex micturition. At the end of the flow the man can help his bladder to empty more completely by pressing downwards and inwards above the pubis. Gentle pressure on the neck of the penis just below the corona of the glans may also excite the reflex—thus accounting for the sudden emptying of the bladder which sometimes forestalls the doctor about to pass a catheter. Once the patient has established the most effective reflex he will find he can by-pass the tidal drainage apparatus, and when he can do that he is ready to get rid of his suprapubic wound. To achieve this stage is an enormous encouragement to his self-confidence; and it is within the power of men who have no sensation in the bladder whatever.

Management of the bowels likewise calls for the intelligent joint coöperation of patient and doctor. In a man with no bowel control or sensation it is sometimes possible to find a laxative which will give a single bulky evacuation daily: preparations of liquid paraffin and agar are often effective. Habit and regular preparation will then give the man some mastery of his bowel. If he takes his dose at the same time nightly, and at a fixed hour next day turns on his side with cellulose spread beneath him, he can usually complete his bowel action for the day, even though he is unconscious of any sensation. For the patient this is a great step forward, from erratic and embarrassing actions at inappropriate times. In patients who have partial sensation and who can move a little—those with a cauda equina lesion, for example—gravity may help bowel action considerably, though it may first be necessary to soften the fæces with a washout. While still too weak to balance himself on a bedpan, a patient can often manage his bowel action if he is helped on to a commode; and once habit has become regular he is master of his situation.

Pain is another aspect of these cases which may be troublesome. Some are pain-free, but many experience severe root pains from the outset—pains which are readily excited by vigorous handling of the paralysed limbs. Some patients, with justice, dread the sight of a patella hammer, and it is as well, when examining reflexes, to make the tap on one's interposed thumb or finger, not directly on the tendon. Fear of the pain may lead to a tense emotional state in which the patient exaggerates small traumata, and even dreads movement near his bed. Treatment must be by sedation and mild psychotherapy; and the best way to distract him from his pain is to encourage him in learning to manage the other aspects of his state.

5. *AMD Bulletin*, March, 1944, no. 33, section 260, p. 10.

Income and Increment

THE Minister of Health has proposed to the medical profession through the Insurance Acts Committee that inquiry should be made into what should be "the range of remuneration of a registered medical practitioner in any publicly organised service of general medical practice." In the opinion of most insurance practitioners such inquiry is long overdue. The present practice of the irregular and reluctant adjustment of the capitation fee, whose original method of calculation was never satisfactory and is now forgotten, could not continue. Repeated representations by the Insurance Acts Committee to the former Minister (1941–43), Mr. ERNEST BROWN, secured the promise that when the war was over the whole basis of payment would be re-examined. The present Minister has brought the date forward and hopes to begin an inquiry as soon as possible. No doubt he is not disinterested in so doing, for in making specific proposals for a National Health Service it would obviously be convenient for him to know what range of remuneration is deemed appropriate. The composition of the proposed committee of investigation (four medical men and four laymen—including an actuary or accountant—with an independent chairman) is such as should ensure that any evidence laid before it by medical bodies will be understood and considered. We hope that if and when the committee begins work it will receive, even in these crowded days, all the help doctors can give to enable it to reach a just conclusion. That their opinions as to their own proper remuneration vary widely is shown by the answers to the question in the recent questionary, "how much (net—with all expenses paid) do you think a general practitioner (of, say, 40) should get from all sources at 1939 prices?" The lowest estimates were below £900, the highest above £3000. Fortunately, however, the terms of reference of the proposed committee do

not ask it to recommend a single figure, but rather a "range of remuneration"; and so, while rejecting extremes, it may be able to make suggestions that will satisfy the expectations of the majority. We hope too that it will consider the strong case in favour of payment partly in the form of family allowances.

Though no more may be demanded of this committee, it will some day be necessary also to answer the much more difficult question how, in any national service, remuneration may be varied so that good work does not go unrewarded. By all means let us have a "range of remuneration," but let us make sure if we can that the better rewards go where they are most deserved. This knotty problem has no easy solution; but it cannot be ignored and has so far had less attention than it deserves. What we must somehow contrive is a system whereby increases of remuneration are not the reward only of seniority and orthodoxy—where a man can earn more only by growing older, and has only to grow old to earn more. Seniority cannot be ignored, for with seniority comes experience, and in medical practice experience will always be the best of teachers. But men of equal age and experience will continue to differ in their ability, in their diligence, and in their willingness to learn and go on learning and applying their skill; and most people will agree that there should be some incentive—beyond the satisfaction given by good work well done—that should stimulate the cultivation of these qualities and reward their possessor.

Who then is to assess a doctor's deserts? Are they to be judged by his seniors, by his colleagues, or by his patients? Or must we try to take into account the opinions of all three groups? Assessment by seniors is the time-honoured path of promotion and remains the rule in most hierarchical systems; but while it may lead to the early detection and reward of the good man, there is a danger that, even more, it will encourage avoidance of any action likely to delay promotion, and so will stifle original ability. Assessment by colleagues would, in a perfect world, perhaps be ideal; but where one man's advancement may mean another's loss, human factors enter which might easily destroy all chance of future harmonious partnership. By one's patients, then? This has its attractions, but is also open to at least two objections. Patients often judge a doctor on qualities little connected with his clinical ability; and competition for the favour of individual patients makes coöperation between doctors difficult, and necessitates retention (for ethical reasons) of barriers that have in the past interfered with education of the people in matters of health.

So we find none of these three methods without its disadvantages, and conclude it may be necessary to take something from each. From the answers to the questionary it seems that a composite method is also what the largest fraction of the profession would prefer. For the payment of general practitioners within a health centre four alternatives were put forward—salary, salary plus capitation fees, capitation fees only, or a division of pooled receipts. Although these four methods do not correspond exactly to our four methods of assessment, it is probable that in a service paid solely by salary supervision from above would most often decide increments of remuneration; that under a capitation system the doctor's income would vary directly with his popularity among patients; and that under a system of pooled receipts, some division, adjustable at intervals by discussion between colleagues, would be necessary. In spite of the numerous partnership agreements that seem to function equitably, this last method had fewest supporters, while the largest vote went to the proposal for a combination of salary and capitation fee. Such a method might in the long run prove the best compromise, for it would allow of a variable salary which could take into account factors such as seniority, the possession of special diplomas, and the performance of special clinical or administrative duties. It would also allow differences of basic salary to be made in compensation for geographical differences which make one area easier or pleasanter for practice. It would provide, too, a commencing salary for the newcomer, which would be augmented by an increasing number of capitation fees as he attracted more patients. Endless argument is of course possible as to which of the two elements in such a scheme should preponderate. Advocates of almost every permutation would be forthcoming, but until we know more of the shape a future service is likely to take—especially the extent to which a more even distribution of doctors is to be encouraged, and the level at which the maximum permissible number of public patients is to be fixed—speculation about the proper ratio of these two elements of remuneration has no firm basis. A reasonable level of payment for everybody is on the whole more important than pecuniary recognition of individual merit. Every decent doctor should have a decent income, broadly matching his situation. But in medicine as elsewhere virtue is partly its own reward—and, however we plan, is likely to remain so.

Work for the Cardiac Patient

THE cardiac patient has never received the same attention as the tuberculous one so far as his reinstatement in industry and his integration into the social scheme are concerned. Special colonies have been provided for the tuberculous and for some other physically and mentally afflicted members of the community, but the person with heart disease has been left more or less to his own devices, in spite of occasional authoritative plans for the amelioration of his lot. Two factors are now working to ensure such patients a modicum of just attention—the steady rise in the average age of the population, with its corollary of an increasing number of sufferers from hypertensive heart disease, and the popular interest in rehabilitation.

To provide much needed data, workers in New York[1] have investigated the occupational status of some 2000 patients with heart disease, all in the small-income group, and have published the preliminary findings of a "work-classification unit" set up at the Bellevue Hospital in that city. The economic position of the heart patient depends on his functional and therapeutic status, the type of occupation for which he has been trained, the necessity for self-support, and his emotional reaction toward his disease. The 2081 patients who formed the basis for this study were approximately equally

1. Kresky, B. and Goldwater, L. J. *Amer. Heart J.* 1944, **27**, 623.

divided between the two sexes, and the average age of the women was less than that of the men. Of the women, 84% were working, compared with 47% of the men, the preponderance of women being partly due to the fact that women who were doing their own housework were classified as working. A special investigation of 90 housewives showed that only 8% were doing no work at home and only 20% were restricted to light cooking and cleaning. Analysis of the records of 1358 patients who were working showed that 21% of the men were doing professional or clerical work, 42% skilled or semi-skilled work (electricians, painters, &c.), 29% unskilled work (labourers, domestic servants, &c.), and 8% were students. The fact that 70% of the men with rheumatic heart disease were working, compared with 51% of those with syphilitic heart disease and 26% of those with degenerative heart disease, can be largely explained by the different age-incidence of these types of disease. More than half the patients with "marked limitation of physical activity" were doing unskilled work. Of 110 patients for whom jobs were suggested as a result of investigation at the Work Classification Unit, many were found to be doing entirely unsuitable work. Thus nearly half the patients who were advised not to engage in unusually severe or competitive work were employed as manual labourers, waiters or waitresses. A follow-up showed that patients with moderate impairment of cardiac function could do sedentary work, provided their hours were limited to 40 a week. One important lesson which emerged is that the patient with a cardiac lesion should live as near his work as possible. There is little value in a 40-hour week if a man has to spend an additional 12 hours a week travelling to and from his work.

This study emphasises the urgent need for further work to ensure that the recommendations of the Cardiac Society [2] are implemented. Some authoritative body, such as the Cardiac Society, should outline the various categories into which cardiac patients can be classified from the point of view of capacity for work. Special clinics should then be set up in selected teaching hospitals where patients can be graded, found suitable employment and carefully followed over a period of years. Centres will be required where middle-aged patients can be trained for suitable work. Both these needs were listed in the appendix to the Tomlinson report. The problem is a large one, but provided the coöperation of employers and the Ministry of Labour is obtained there is no reason why every patient with a heart lesion should not be provided with work suitable to his capacity.

2. See *Lancet*, April 8, 1944, p. 484.

Annotations

THE BURST ABDOMEN

IN at least one in every 200 laparotomies the wound bursts open, usually between the sixth and ninth post-operative day, and some part of the peritoneal contents becomes visible. Of the patients who suffer this accident about one in three dies. Tashiro,[1] in his review of American writings on the subject, shows that there is no agreement on the cause of burst abdomen, but it seems likely that more than one factor is nearly always at work. Normal wound healing has been investigated by many workers, notably by Howes, Sooy and Harvey [2] who found that in dogs there is a lag period of five or six days, characterised by absence of fibroblast activity, before the tensile strength of a wound starts to increase. Wounds in fact grow weaker during the first few post-operative days, especially after repair with catgut, because œdema makes the tissues friable and less apt for holding sutures. There is no reason to suppose that the canine differs from the human fibroblast, and man's abdominal wounds undoubtedly undergo a lag period of much the same sort as the dog's. During this time even a normally healing abdominal wound may burst if an unfair strain is put on it by severe vomiting, coughing or by meteorism in the early days after operation. Since the strength of a wound depends at first on the handiwork of man rather than on the efforts of Nature, the details of surgical technique will influence the strength of the wound; suture materials, spacing and type of stitches, knots, position of the incision and placing of drains are of much (and some think of paramount) importance. Even when such mechanical factors are satisfactorily attended to, it is vital to keep the lag period, which nature requires to mobilise the fibroblasts, within normal limits. The lag will be prolonged if there is a gap between the wound surfaces, caused for example by hæmatoma or by collections of pus. It will also be lengthened if there are deficiencies in the healing power of the tissues, and much attention has lately been given to this. Its importance is well illustrated by Hunt's [3] investigations on 17 human laparotomy wounds which came to autopsy between the seventh and fortieth postoperative day. In 8 of these cases the histology was strikingly similar to that seen in the experimental wounds of scorbutic guineapigs, and no less than 5 had suffered disruption of the abdominal wound. It has been conclusively shown by many workers that one factor which interrupts the healing of experimental wounds in animals is lack of vitamin C. Bourne [4] has shown that the tensile strength of healing wounds in guineapigs varies with the daily dose of vitamin C. Hunt and others have demonstrated experimentally that scurvy interferes with collagen formation. Besides scurvy, hypoproteinæmia has been found to cause slow and unhealthy healing of wounds in dogs.[5] It seems probable that vitamin C is of prime importance in healing; but there are without doubt other nutritional factors at work, among them hypoproteinæmia, on which further light is required. It would be interesting to know whether war wounds of the abdomen are more or less prone to bursting than the wounds of civil surgery. Estcourt and his colleagues,[6] and Law [7] and Blackburn [8] have recently published in these pages accounts of abdominal wounds, totalling 195 cases between them, in which they mention only one burst abdomen. One would expect that the unfavourable surgical circumstances which attend both the infliction and the repair of abdominal wounds in soldiers would lead to frequent bursting, and the fact that the scanty information available does not support this expectation suggests that the superb nutrition and health of fighting troops is a compensating insurance against this accident. In Bourne's vitamin-C deficient guineapigs the deeper layers of the wounds tended to give way, leaving the skin intact. This suggests that the ætiology of burst abdomen has an important bear-

1. Tashiro, S. *Surg. Gynec. Obstet.* 1944, **78**, 487.
2. Howes, E. L., Sooy, J. W. and Harvey, S. C. *J. Amer. med. Ass.* 1929, **92**, 42.
3. Hunt, A. H. *Brit. J. Surg.* 1941, **28**, 436.
4. Bourne, G. H. *Lancet*, 1944, i, 688.
5. Thompson, W. D., Ravdin, I. S, and Frank, I. L. *Arch. Surg.* 1939, **36**, 500.
6. Estcourt, H. G., Ross, J. A., Clarke, S. H. and Ross. R. W. *Lancet*, 1944, ii, 38.
7. Law, W. A. *Ibid*, 1944, i, 425.
8. Blackburn, G. *Ibid*, 1944, i, 361.

ing on the less dramatic but more frequent post-operative hernia.

The prevention of postoperative disruption depends therefore on the anæsthetic, the surgical technique and the diet. The anæsthetist by his skill can diminish cough and vomiting, and give the surgeon that relaxation of the abdominal parietes which favours gentle handling of the bowel and ease in repairing the wound. The surgeon must neglect no point in technique which will contribute to the firm apposition of the wound edges, and he must remember the vitamin intake and plasma proteins of his patient. The dietitian must ensure as much food of high protein and vitamin content as the patient can take. Last and by no means least, adequate supplies of these foods, which are now so strictly rationed, must be available in institutions where the sick and wounded are treated.

FREEZING TO DEATH

EXCEPT for an occasional tourist, straying from the beaten tracks of Snowdon or Scafell, few people are frozen to death in these islands. In Russia it is otherwise, and the Germans were lately taking almost as much interest in freezing as in frostbite. Grosse-Brockhoff and Schoedel [1] published four papers on the subject in 1943. They discussed the widespread effects of cooling on medullary function, oxygen consumption, carbohydrate metabolism, blood lactic-acid content, circulation, respiration, hæmoglobin and hormone regulation, and performed a series of experiments on dogs. Simultaneous readings were taken of the temperature of the rectum, skin and brain, the respiratory volume, composition of expired and alveolar air, arterial and right ventricular blood-pressures, the rate of femoral blood-flow, the oxygen, carbon dioxide and lactic acid content of the blood and its CO_2 combining power, with an electrocardiograph running throughout. They discovered little of special value, but they did show that failure of the adrenals—so often accused on little evidence of being responsible for death from hypothermia—did not occur. This finding is consistent with Gellhorn and Feldman's [2] demonstration that cold stimulates both the sympathetic and parasympathetic components of the autonomic nervous system. If the German experiments showed anything, it was that the real cause of death will probably prove to be the direct effect of cold on the heart. That their work was not inspired by pure scientific curiosity but by a desire for practical results is shown by their next two papers in which the therapeutic effect of a large number of drugs is examined, again in dogs. From these it appears that atropine and intravenous glucose are worthy of trial, that cardiazol and strychnine are useless, and that nikethamide, lobeline and adrenaline are dangerous: the first two because the cooled heart is unduly susceptible to vagal action and the last because it produces a fall in blood-pressure. Werz [3] attacked the problem from a different angle and concluded that the essential lethal factor is oxygen deficiency, brought about by a simultaneous increased demand (produced by the normal physiological reactions to cold) and decreased supply (due to reduction in the dissociation of oxy-hæmoglobin).

These experiments were conducted on dogs whose body temperatures had been reduced to 77° F. The results can be compared with the observations of Talbot [4] (Boston) who, treating inoperable cancer by "crymotherapy," reduced the rectal temperature of two of his patients to 74° F. and 75° F. without ill effects. In the hibernating animal the freezing point of water may be approached. All patients suffered from auricular fibrillation below 80° F. The dogs used by the German workers showed bradycardia down to 82° F., when auricular excitation disappeared and the AV node took over. At still lower temperatures the sinus rhythm reappeared at intervals, accompanied by AV dissociation and ventricular extrasystoles, single or in salvos. Meanwhile conduction became steadily slower and occasional heart-blocks of various types occurred. The ventricular complex was broadened and followed by an arch-shaped ST interval. The changes developed both in vagotomised animals and those under atropine. Of more general interest perhaps is the observation, attributed by Talbot to an eighteenth-century bon viveur named Weeks, that immersion throughout the night in cold water entirely prevents the after-effects of alcohol.

The subject has been recently reviewed in a monograph by Méd. Lieut.-Colonel Scheiniss,[5] working in the surgical clinic of Prof. S. Guirgolave at the Military Academy of Medicine in Moscow. Colonel Scheiniss points out that outside the laboratory death from cold alone does not occur, such adjuvants as humidity, wind, snow, old age, hunger, disease and injuries, or excessive consumption of alcohol, being necessary. Freezing to death in the sense of solidification never occurs, death taking place in men at about 68° F., well above the freezing point of tissues. Solidification occurs only after death. Before death the body becomes poikilothermic. Scheiniss has not observed any cardiac changes other than bradycardia and, in contradiction to other observers, finds no significant change in the composition of the blood. As earlier workers have shown, the BMR in warm-blooded animals exposed to cold rises at first, but as body temperature falls the BMR also falls, and does so progressively till death. The early increase in heat production is due exclusively to carbohydrate metabolism, and rats fed on high carbohydrate diets survive exposure to cold longer than controls on normal diet. Scheiniss takes the view that it is impossible to ascribe death to failure of any one organ, but differs from German workers in giving pride of place to the central nervous system rather than the heart. In practice he recommends rapid warming, advice as wise in general hypothermia as it is unwise in localised frostbite. Contrary advice, to warm the patient very slowly, has probably been given in the past owing to confusion between the two conditions. Dr. Scheiniss is to be congratulated on a monograph not only of considerable merit but, so far as we are aware, the first of its kind. It is hoped that a translation into English will eventually appear.

APPLIED RESEARCH

THE fundamental research undertaken by universities and colleges will sometimes result in discoveries of no small commercial value. Academic bodies seldom shine in the pursuit of private profit; they exist for a very different purpose. But there is no reason why their work should be exploited by others or should run to waste when the public would benefit from its development. A recent publication by Nuffield College [6] contains, among much else of interest, a suggestion that we might do worse than take note of the success of bodies like the Research Corporation which deal with this problem in the United States of America. Mr. F. G. Cottrell, an instructor in chemistry at the University of California, discovered a method of recovering by electrical agencies the mists of sulphuric acid, the chemical fumes of smelters and other waste products of manufacture. Disdaining to harvest the personal fortune which awaited him, he considered handing over his patent rights to his univer-

1. Grosse-Brockhoff, F., Schoedel, W. *Pflüg. Arch. ges. Physiol.* 1943, **246**, 664. *Arch. exp. Path. Pharmak.* 1943, **201**, 417, 443, 457.
2. Gellhorn, E., Feldman, J. *Amer. J. Physiol.* 1941, **133**, 670.
3. Werz, R. von, *Arch. exp. Path. Pharmak.* 1943, **202**, 561.
4. Talbot, J. H. *New Engl. J. Med.* 1941, **224**, 281.
5. Scheiniss, B. Death from Exposure to Cold, Moscow, 1943.
6. Problems of Scientific and Industrial Research. Oxford University Press. 2*s*.

sity. Realising, however, that an academic institution is ill equipped to handle the niceties of patent law or the commercial application of a new process, he founded instead the Research Corporation, incorporated in 1912 with powers to receive patents from any inventors who were willing to bestow them and to have the returns devoted to the cause of science. In the 12 years ending in 1941 the corporation had been able to give a million dollars in support of scientific and industrial research. It has its own laboratories, but it applies its resources primarily to finance investigations elsewhere. It acts for many universities and colleges, including the well-known Massachusetts Institute of Technology. This achievement the Nuffield Statement regards as preferable to the results obtained where an American university has created a separate patent-holding entity of its own.

There is an element of over-simplification in speaking of "fundamental" or "pure" research as something appropriately or inevitably domiciled in university laboratories in contrast with the "applied" research which goes on in government laboratories, research associations or individual or grouped industrial firms. The Nuffield Statement insists upon the unity of science and, among other practical steps, advocates some system of superannuation for research workers who labour in the common cause, whether in the fundamental or the applied field of discovery. To play its part in the postwar economy, this country will need trained personnel and first-class original work even more than money, buildings and equipment. We have no real shortage of ability, but we must set about its mobilisation. Publicity has already been given to the rival views of big firms which desire different degrees of rigidity in the scope and operation of our patent laws. Not less important is the problem of making the university scientist available as adviser or research worker to a private firm. Is he to live a cloistered life untainted by association with the profit motive, and is his university to hold itself aloof from applied science? The eminent signatories to the Nuffield Statement, many of them fortified by actual experience of both fundamental and applied research, ask for an easier interchange between the two fields of activity, and would like to establish a recognised code of conduct for the university man who undertakes industrial research for a private firm. They suggest that a small committee representing academic and industrial interests should work out some reasonable arrangement in consultation with the professional bodies concerned. The Association of Scientific Workers, in a recent report,[7] also thinks well of the idea of a Research Corporation and would like it probed by the Royal Society or the proposed Universities Council.

Aided by ancient tradition, the medical profession has already encountered certain aspects of the relation between scientfic discovery and commercial exploitation. Its contribution may well justify a cautious optimism of approach to the wider problem.

FOOD RATIONING AND SUPPLY

RATIONING in some form or another has now cast its shadow over almost all the world. But no two nations have had to face quite the same problems; for some there have been only mild restrictions on the purchases of certain foods, while for others a rigid system of rationing has been in force, covering nearly all edible commodities.[8] Rationing, however, even a rigid system like that of Germany, need not imply a scarcity of food or malnutrition, and it does not necessarily affect all the population equally. Farmers in all countries have been largely unaffected by rationing, and all scarcities have developed in urban centres, where food intakes have depended on the size of legal rations, the extent to which these were available, the purchasing power of wages, and the black market. There was a notable improvement in the rations in many European countries in 1943–44 owing to the good harvests which prevailed last year.

The theoretical calorie intakes seem to be up to prewar levels in Denmark, Germany, Rumania and Hungary; and in Germany, in particular, the intake appears to be quite 3000 calories per day per adult male. In Bohemia and Moravia, Belgium, Finland, the Netherlands and Norway, rations in most cases supply fewer calories than were consumed before the war, and there have undoubtedly been shortages among some of the consumer groups. In the Baltic States, Slovakia, France and Italy, rationing has been more restrictive, and in Poland, Greece, parts of Jugoslavia and occupied Russia, famine conditions have prevailed from time to time, but in general the position has improved since 1942. In Denmark and Germany every effort has been made to maintain the output of "protective" foods, and by the creation of priority groups to see that every member of the community gets the nutrients which he requires; but it has not been possible to ensure this over the whole of occupied Europe. Norway is very short of vitamin C, for example; and in the Baltic States, Poland and Greece the shortage of calories dominates the situation to such an extent that until these primary needs are made good the composition of the diet must remain of secondary importance. Even the neutrals have not had an easy time. Scarcity and malnutrition are still widespread in Spain and accentuated by a flourishing black market. Sweden and Switzerland have based their rationing on the highly differentiated German system, but both countries have been able to leave potatoes unrationed and to introduce some flexibility into the system. Eire has had to face a serious shortage of wheat, and for the first years of the war had to resort to a bread made from 100% extraction flour. This loaf was not fortified with calcium, and an increase of rickets in Dublin[9] seems to have been the unfortunate result of this omission.

The British system of rationing is far less differentiated and rigid than the German, and there has been much more flexibility and freedom of individual choice. Shortages of fruit, some vegetables, and of meat there may have been, but potatoes and wheat, in the form of 85% extraction flour, have never been rationed, so that everyone has been able to satisfy his demand for calories. The canteen meals (off the rations) and the points system have aided all to get the kind of food they like and require, and the priority arrangements have benefited children and pregnant women. There can be little criticism of the way the food situation has been handled in this country. Civilian death-rates were lower in 1942 than they had been in 1938 in the Netherlands, Denmark, Sweden and Switzerland, and they are unchanged in Britain, suggesting that rations in these countries were adequate up till then. The death-rates rose, however, in Germany and all the occupied countries except Bulgaria; but it is impossible to attribute this entirely to malnutrition, since there is no evidence from the rationing system that there was any malnutrition to speak of in Germany at that time. It is evident that the relationship of nutrition to mortality, whether of adults or infants, is a difficult one to decide.

The war in Europe may end before long, and plans for relief have been made; but clearly some of the occupied countries will require a great deal of assistance, and if transport breaks down acute scarcity is likely to develop in some districts, even in states such as Germany which are relatively well off today. The worst conditions are likely to be found among the inmates of institutions, particularly those which cater for the old and infirm.

7. Science in the Universities: report submitted to the University Grants Committee. From the Association at 73, High Holborn, W.C.1. 1s.
8. Food Rationing and Supply, 1943–44. League of Nations publications department. London: Allen and Unwin. Pp. 101. 4s. 6d.
9. Pringle, H., Reynolds, R. A., Jessop, W. J. E. *J. med. Ass. Eire*, 1943, June, p. 67; Croasdaile, H., Collis, W. R. F., Pringle, H., Jessop, W. J. E. *Ibid*, p. 69.

Special Articles

A STUDY OF TREASON[1]

A. M. MEERLOO, M D
MAJOR, ROYAL NETHERLANDS ARMY

ESCAPERS all have great difficulty in ordering their reminiscences. They suffer from an emotional amnesia and do not find it easy to recall their unpleasant experiences in occupied countries. In spite of this amnesia we want to get at the facts, we want to remember our experiences lest they should escape us entirely. I was never more pleased at being a psychologist than during those terrible years of occupation; because psychologists know that such things exist in men and that such happenings are possible, and they are therefore better able to defend their own personalities than most.

Why are we so deeply affected by the idea of treachery? Is it only betrayal by our friends which cuts us, or is there an instinctive loathing of treachery in general? Or is it the potential traitor in each of us, the curious problem of self-betrayal, which attracts our attention?

THE MOOD FOR TREACHERY

No traitor will admit his treachery: in his own mind his conduct is perfectly justifiable. In the course of practice I have come across several people who later became traitors. One could not have called them wicked: they were rather of the type that is easily influenced by current ideas and theories. Those who tried to intimidate me with their fascism were never strong characters: they were rather those who were disappointed in life, the frustrated who transferred their feelings to political phantoms. Among them were people with serious psychiatric abnormalities, some with homosexual tendencies who had been unable to find any real basis for their lives. Two who took a violent part in the betrayal of Holland suffered from a strong mother fixation which was projected on their country. These are examples of disloyalty the seeds of which were sown in youth; and abnormal fixations of the kind are common.

After the occupation, such people would come to me triumphantly and point out how right they had been. Their new security, backed by force, made them hard and contemptuous to those who had failed. They made great play with the slogans of the conqueror: they were working for a new Europe, they declared; humanity and righteousness were taboo; blood must flow for the sake of an idea. They took over the Nazi scapegoats, Jewry and Bolshevism, and declared almost with tears that these made inhumanity necessary. They quoted Rost van Tonningen, one of the Dutch Nazi leaders: "The Jews have no culture, and must therefore be got rid of, however deplorable this may be."

The mixture of animal impulse and self-deceit which made up their arguments, combined with their specious friendliness and their desire to make a convert of me, often sickened me. These people, with their eternal need for justification, their desire to be led, their private grudges and hatreds, needed above all things to make converts, to persuade people of the rightness of their attitude. Traitors always try to assuage their consciences by persuading other people into treachery. Above all, they were people with a grievance, desirous of revenging themselves on society for its ill treatment of them.

The desire for revenge is the outward symbol of an inner incapacity, a weakness. It is the religion of the dissatisfied, of those whose ambitions have been frustrated—and the Nazis understood this very well. They systematically sought out such people. Thus a director of a Dutch government concern who was dismissed on moral grounds received next day an invitation to join the Nazis, and became the leader of his guild. The head of another concern, dismissed for embezzlement, returned a few weeks later as a Nazi agent. The armed Nazi police force, the "Weer Adeeling," was recruited from among the inmates of a hospital for psychopaths.

The act of treason can sometimes be committed more easily if a man changes the group with which he identifies himself. Thus Lord Haw-Haw now calls himself a German. The Nazis gave the weak, the guilty, the ambitious, the frustrated, a camouflage and a set of bogus ideals to which they could transfer their fears, their guilt and their unfulfilled desires. What could not be done by persuasion was done by terror. I know myself how great was the temptation to go over to the enemy, to the strong party. Its set of slogans and its ready-made philosophy comforted the faint-hearted; and if these failed there were less subtle but equally convincing threats of punishment. The German propaganda machine is, in fact, a rather successful instrument for poisoning men's minds. *Mein Kampf* often refers to the method of using human weakness as a starting-point for systematic persuasion. Hitler says that one must give the disappointed a sense of greatness and importance; then they will swallow every suggestion with the utmost docility.

With the Dutch they had some success at first because of the suddenness of the invasion. Material surrender meant, for a short time, mental surrender. People tried to justify the Germans, to identify themselves with ideas which appeared to be stronger than their own. The same thing happened to German thinkers in 1933. Suddenly afraid, they surrendered their science and beliefs to something which they believed to be stronger than themselves. Just so unstable is our structure of truth.

THE MAN BENEATH THE TRAITOR

All so-called traitors believe their change of attitude emerges from their normal mental development. We, on the other hand, should say it was a result of abnormal development, which could not have occurred if they had been fully integrated. This does not imply that a man must remain bounded by the group from which he originally received his feelings and ideas. Mental development demands that he shall be the eternal protestant, facing reality, dogma and tradition with a critical mind. It is the fate of man to go further than his teachers. Socrates was accused of being a traitor, of corrupting youth; but he refused to escape from prison out of respect for his country's laws. This is not the way of the traitor: he sees only his own rights, never those of the community.

In this war, what we call treason takes place not on the intellectual but on the instinctive plane, and can be traced back to the earliest stages of emotional development. In the course of growth there are several critical phases entailing major adaptations. A man who does not succeed at one of these stages becomes static, yearns for the security of his past, and cannot achieve any other security.

The most revolutionary phase which we experience consciously is puberty; during this phase we leave the protection of the family, with its own norms and standards, and try, unprotected as we are, to make new standards for ourselves. The adolescent develops his critical powers, putting everything to the test of his reason, limited though it is, and doubting traditional truth. He might be said to be treacherous to his former surroundings; but he is, in fact, being true to the self he is beginning to discover. Nevertheless, he has a sense of guilt, loneliness and longing. So too the revolutionary, who breaks with tradition at the behest of a higher power within him. Most adolescents, after their period of revolt, become men adjusted to the world as it is. Those who do not adjust themselves fall into two groups: the progressives who are guided by principles which later are held to be "good," and the nihilists who take their revenge on society by attempting to destroy it.

Thus we can arrive at a psychological definition of treachery: it is a failure to pay due regard to our inner processes, a denial of ourselves. Every betrayal is a self-betrayal. It is the giving up of one's own sincerity, either in return for power, money or some other gain, or under pressure from outside. Every time we silence our consciences for our own interest or to please others we are treacherous.

Such treachery has roots in the ambivalence of man. The adolescent as he steps into a new world feels himself cut off from the world of his childhood; he hates what he forsakes, feeling it has forsaken him. Just so the traitor hates the leader he forsakes. This hatred is not always conscious: inverted, it may appear as a dread of aggressiveness. Some people declare they cannot hate; they are less willing to defend their values than to justify the

1. Abstract of lecture given to the British Psychological Society on July 1.

actions of the enemy. Their own aggression, of which they are subconsciously aware, inspires feelings of guilt, and their sense of inferiority urges them to bow to a superior power. The same fear of aggressiveness makes them refuse to accept as truth the stories of their friends and allies.

A sense of guilt is one of the most fertile sources of betrayal: once an injustice has been done, the victim is an object of hatred and a candidate for further injustice. This explains the crescendo of criminality in Germany.

The decision to betray or not to betray does not always present itself as a clear-cut issue; but the opportunist who would postpone the decision has already half linked himself with the enemy. The Germans, who understand this well, have made it easy for civil servants in ambiguous positions to sign declarations dissociating themselves from the cause which they are actually espousing. The conflict remains, and victims of it fall into a state of moral numbness and confusion which puts them completely at the mercy of the enemy.

Betrayal of others, then, may be the result of developing powers of thought which carry the thinker beyond his fellows; but self-betrayal is bound up with aggression, repressed patricide, lust of power and egoism.

HOW TRAITORS ARE NOT MADE

After the war we shall have to cope with many traitors, and our own guilt may cause us to forgive them too easily. However, just as the hypnotic force of fascism strengthened the fascist tendencies of men, so it may be that mass suggestion towards good may neutralise treachery in traitors. In any case, the horror of the world at their actions is bound to diminish in time, and neither horror nor their own sense of guilt will do away with the problems of self-betrayal and resentment against society. Some people can only conquer their sense of inferiority by a persistent attitude of dissatisfaction; they prefer the secrecy of clique and schism to productive work with the community. Thus it would be folly to segregate traitors together: that would be to breed a pure culture of hatred.

For the psychologist, the traitor is a person who needs to break away from his environment, even to do violence to it; and his reasons, any of which may be true, are connected with his development, particularly during adolescence. The politician and the psychologist meet in considering how to cope with him and how to prevent his reappearance. It is dangerous to permit a man to persist in his personal discontent—he too easily becomes blinded to all save his resentment against society. Such hatred can be exercised only by allowing each man freedom to criticise and by creating in him a sense of responsibility for his views. In democracy the opposition has an important part to play, and a democracy conscious of its own ideals should be able to eradicate psychological imbalance of this kind.

THE FAMINE IN BENGAL

(FROM A CORRESPONDENT)

A CLOSE network of hospital and general-practitioner services linked to the public health services, such as we enjoy in England, does not exist in India. Gross differences in the health standard of the two countries strike one forcibly the moment one lands in Bombay. In the streets of Indian cities, towns and villages are to be seen people suffering from contagious and other diseases in all stages, including the most active. Widespread active disease, widespread malnutrition and an extremely low general standard of living are one's first impressions.

To quote Dr. J. B. Grant[1] director of the All-India Institute of Hygiene and Public Health:

"The level of health in India is low. Preventable epidemic diseases such as smallpox, typhoid, dysenteries, cholera and malaria are widespread. Tuberculosis is spreading and each year presents a more menacing problem. The resistance of the population to disease is low. Malnutrition and nutritional diseases are omnipresent. The heavy incidence of disease is reflected in the high mortality figures given in the following table.

1937	Death-rate (per 1000 living)	Birth-rate (per 1000 living)	Infant mortality (per 1000 live births)
India	22·4	34·5	162
Australia ..	9·4	17·4	38
England-Wales	12·4	14·9	58
Japan	17·0	30·6	106

"*Expectation of life.*—British India 27 years, Australia 67 years, England-Wales 63 years, Japan 47 years."

He points out that in rural districts—and India is largely agricultural—the unit is a health centre for about 80,000 people spread over 80 sq. miles. The usual staff is one sanitary inspector, one health assistant, and one or more vaccinators and medicine carriers. In Bengal (population 60 million) the total cost of the scheme is Rs.1,200,000, say £80,000. Thus for each of the 600-odd units the cost is £130. This works out at two-fifths of a penny per person! Compare England where the school medical service alone costs 7*s.* per head of school population per annum.

Curative dispensaries and hospitals number 6500, and they can deal with 35 million patients a year. Most Indians get their "medical attention" from practitioners of indigenous pre-scientific medicine. The total number of doctors is 42,000 (1 per 9000 of the population), and of trained nurses (in peace-time) less than 4500.

As to conditions in towns, the report of the Central Advisory Board of Health for 1939 states that "according to available information nearly one half of the districts and three-quarters of the municipalities of British India are still without qualified health officers."

FOOD AND FAMINE

The sketchy medical services outlined above are representative of the general public services and reflect also the appallingly low general standard of living. In peace-time the standard is barely one of subsistence for most of the people, and a diet inadequate in calories and grossly inadequate in vitamins and minerals is the rule.[2] Obviously any diminution in the food-supply of a population that "normally" lives under such conditions will have disastrous effects, and such a diminution took place in Bengal, in the Bombay Presidency and parts of the Central Provinces and the Southern states in 1943. I lived in Bengal from July, 1943, until last April and saw a good deal of the famine there. I am not concerned here with the causes of the famine, except to say that it is generally agreed to have been man-made. That is, it was not due to any absolute shortage of foodstuffs in India, but to maldistribution, hoarding and other evils of inefficient administration.

In Calcutta in July, 1943, I saw starving destitutes, mothers with starving children, starved corpses in the streets, and food queues hundreds of yards long in which the destitutes often waited for more than 24 hours. And in the restaurants plenty of good food. Plenty of food too in the wayside stalls, for those who could afford it. The destitutes pick the garbage cans and strew the contents about the streets. Result: stinking streets.

In the country districts, where I worked till December, villages were deserted, families were starving by the roadside, and there was a general migration to Calcutta and lesser towns such as Chittagong, Comilla and Dacca. Towards the end of 1943 the Army was put on the job of famine relief; by this time the attendant epidemics of malaria, smallpox and cholera had reached alarming proportions and plague was reported in many districts.

Any description of things seen daily in the country would read like a horror story. But even in Calcutta they were very bad, as is shown by the following extracts from the *Statesman*, a responsible British-owned paper:

August 8: "For some weeks emaciated human beings migrant from foodless areas in the mofussil (country districts) have been dying in the streets of Bengal's capital."

August 13: "Every hour of the 24 may be seen in Calcutta, and other towns, men, women and children lying about the pavements, the footpaths, under trees, lucky if they are sleeping through the hours of hunger, wet, weak and ill, almost hopeless."

1. Health of India. (Pamphlet on Indian Affairs No. 12.) London: Oxford University Press. 1944. 9*d.*

2. Marrack, J. R. Food and Planning. London, 1942.

October 20: "Mortality in the city for the week ending October 16 had been 2154 ... the quinquennial weekly average for this time of year is 573."

Early this year the Department of Anthropology of Calcutta University made a sample survey of 8 of the 28 affected districts. The family was taken as a unit, and the survey was the first attempt of its kind, for previous estimates of mortality had been based on the figures given by the village watchman. The survey shows that in 816 family units, with a membership of 3840 the deaths from June to December, 1943, were 386, or 10%. The report says that for the whole of Bengal the probable number of deaths above the normal comes to well over 3,500,000 (total population 66,000,000). Of the deaths, 30–50% were of children below five years of age.

SOCIAL EFFECTS OF FAMINE

Besides epidemic disease, the famine has brought widespread social disruption to Bengal. The peasant cultivator has been forced to sell or mortgage his farm for ready cash. Thus in Nilphamari (Rangpur district, North Bengal) in August-October, 1943, the number of property sale deeds was 11,915, compared with 4368 the previous year. And during the same period in Narayagang (East Bengal) 150–195 sales or mortgages were registered, against the normal 10–15. When the ready cash thus obtained is exhausted, the cultivator usually leaves his village for Calcutta. His daughter often takes to prostitution; and in the words of the *Statesman* (August 13, 1943), "there is a further great evil, about which men have spoken cautiously in public. Many young people, homeless and friendless, have disappeared, probably sucked or dragged into the vice of a large city." With the widespread destitution, families are broken up. What this means to the future of the province can hardly be visualised at present; it will necessitate a huge programme of rehabilitation.

I have not touched on relief measures; and the work of the Army, the Friends Ambulance Unit and various voluntary and local bodies, such as the village food committees, must be recognised. But what is not realised over here is the vastness of the tragedy that last year overcame a population greater than that of the British Isles, and the vastness of the danger which confronts it again this year.

Reconstruction

A NATIONAL MEDICAL SERVICE?

EXTRACTS FROM A BROADCAST DISCUSSION

On August 3 the BBC broadcast a discussion between Dr. Guy Dain (chairman of council of the British Medical Association), Sir Arthur Rucker (deputy secretary of the Ministry of Health), and Flight-Lieutenant W. P. Matthews, representing the potential patient. Here are passages from their debate.

Dain—I can tell you why the doctors are suspicious. Ever since National Health Insurance was introduced 30 years ago, we've been pressing for its improvement, and the Government's done nothing. Sir William Beveridge produces an excellent report on social security: as a financier he's bothered about the outgoings from his social security fund on sick-pay—on doctors' certificates in fact. That leads him to suggest a comprehensive medical service in order to improve health, and in order also to control those doctors' certificates and expense: that's what's stimulated the Government out of its 30 years' sleep. And again over 16,000 doctors are in the Services—about one-third of our prewar working personnel. The rest are hard-worked as never before. Why choose this moment to make a change? Of course many doctors are suspicious. Are you surprised?

Rucker—Yes, I am surprised—very surprised. It seems to me grotesque that anyone should suppose that the Government are going to all this effort to introduce a comprehensive service for everybody's health simply to secure a hold on medical certificates; to save money on an insurance scheme, are we to spend 130 or 140 millions on a health scheme? I'm also surprised to hear a doctor say that they ought to let all the doctors in the Forces overseas come home without any idea of what the future of the medical services will be—without any idea of what their own future is to be. To say to them "we're sorry, we haven't made any plans for you; we waited till you came home!" Is that what they really want the Government to do?

Dain—Well that wasn't what I said either.

Rucker—We must try to get away from this atmosphere of suspicion you know. ... We must take the thing on its merits, and the plain truth is that the Government and the doctors and everybody else want to get a good service, and what we're arguing about is how to get it.

* * *

Dain—Now, Matthews, you say what are the doctor's difficulties? Well, what do *you* want? You want easy access to your own doctor—the doctor you choose. You want him to have behind him good hospitals, good specialists, nurses, and so on.

Matthews—That's right.

Dain—I want those things, too; so do all doctors. In so far as the doctor is anyone's servant, he should be the servant of his patient. The paymaster—if it's the state or any outside body—should have nothing to do with it. We don't want doctors responsible to the Government or to local authorities—we want them responsible to the patient.

Matthews—Yes, and you think that the white-paper proposals would interfere with this.

Dain—They well might. If doctors are employed by the state, like state employees, it would interfere. If their success were dependent on the favour of superior officers or committees, it would interfere. I want their success to depend on the number of patients who choose them and trust them; the patient should in this way be the doctor's employer, and determine the doctor's remuneration. The position of the patient is fundamental.

Matthews—Yes, I see what you mean. Now I must say I've been bothered myself at the idea I've heard of people going to a health centre and just taking whatever doctor happens to be on watch at the time. Then perhaps you go a second time and you get a different doctor, and a third time and a different doctor, and it seems all wrong to me.

Rucker—Well, Matthews, I don't think you'd better let the doctor frighten you about that. There's nothing in the white-paper proposals which would interfere with a free choice of doctor: the ordinary relationship between the doctor and his patient such as you and I have with our doctors. Even in the health centres that idea is the essence of the new scheme, and really any difference between us on that is quite imaginary. In the Government's proposals, every patient will be able to choose his own doctor—his present doctor if he likes him, of course—and the doctor will be free, as now, to accept or not to accept a patient. If a doctor and a patient use the health centre, they will still keep the ordinary doctor-patient relationship; the doctor will still be the family doctor, will still visit the patient in his home and so on. Do let's get rid of that bogy now.

Dain—Yes, yes, yes, but you're not telling the whole story.

Rucker—Why?

Dain—For doctors to work together is obviously good. Under certain circumstances it would be an advantage for them to work together in specially designed premises—call it a health centre. There are advantages, but there are disadvantages. Mind you, patients would have to travel greater distances and there would be less privacy. But what the Government has done is to say to doctors "you can work in health centres only if you enter into contract with the local authority, and only if you work on the basis of salary or similar alternative." In other words, the health centre in the white-paper looks like being a means to an end—a state service for doctors.

Rucker—I'm very glad, if I may say so, that you've raised these points, because of all the criticisms of the white-paper I believe these two are the biggest bogies of all. Take first your point—that doctors in health centres would be in contract with the local authority. The answer is quite simple. It is that they would not be employed by the authority. Their employer in the public service would be a central professional body; and all important questions, terms of service, remuneration and so on—all those things would be settled centrally. And the second point—perhaps it's rather more important—is what I call the civil service doctor bogy, the awful fear that some doctors seem to have that they might become what I am—a state servant.

Dain—If they were all like you ... We're afraid that the Civil Service method of officialdom and red tape will interfere with what is essentially a human service and a human relationship. And the white-paper might well put

doctors under the thumb of the state—the state laying down the form of practice they should take up.

Rucker—Yes, I know: I know this is to many of your people a serious bogy and I want to take it seriously. Of course doctors don't want to be turned into civil servants, nor does the white-paper propose to do so. This is not a proposal for a State Medical Service: it's a National Medical Service, and that's quite a different thing. The white-paper is said—I think you said it—is said to be trying to introduce a state service on the sly by starting with a salaried service in the health centres. Well, believe me, it just isn't. The only point made in the white-paper is this: that if a small group of doctors are to practise together as a sort of partnership in a health centre, it wouldn't be a good thing if they were in financial competition among themselves for patients.

Dain—Ah well, you're being very persuasive. But at the beginning of the white-paper the Government speaks of free choice of doctor as of something which is desirable, but when you get to the health centre you use a different term to describe the same thing. You call it "competition for patients."

* * *

Rucker—We want the same family doctor idea in health centres as outside. The same free choice of doctor. But the doctors in the health centre would be just like doctors in a private partnership and partners don't compete against each other. But anyway, what we're really after—and indeed I think you're after—is to try an experiment. An experiment with health centres of various shapes and forms, and in the end it will depend on whether the people prefer it or don't. The verdict's with the patient in the whole of this scheme, you know.

Matthews—We hear about prefabricated houses and things like that, and some of us like them and some of us don't; but in the back of our minds there's the idea that we may be coming back to a different kind of England from the one we left, where everything, perhaps, is going to be managed very efficiently, but it's all a little machine-made. Do you see what I'm getting at?

Rucker—Yes, I do. I know exactly what you mean, but do please believe me that conception is quite alien to these health proposals. They do try all the time to keep as much as possible of freedom and individuality and variety.

Dain—Yes, that's true, but it's no use ignoring the difficulties about the scheme, and there are difficulties. Look at it this way. The Government now propose to engage for the first time a whole profession in the public service. Up till now we've been largely an individual profession, expressing our individuality in our own way in the interests of our patients, no third party on the whole coming in between us and interfering. We don't want our hands tied in regard to our patients.

Rucker—They won't be.

Dain—But they might be. A profession which gets the bulk of its emoluments through the state will always be in danger of Government interference. You can't deny that. It's not the white-paper that matters so much now, but what bureaucrats will do in the years to come. We know the animals by now.

Rucker—Thank you!

Dain—At the moment we're fighting a war. We employ experts to do it, expert Navy, expert Army and expert Air Force. The government departments concerned are guided by the experts. We shouldn't say at this moment that such services would be better run by, say, the Civil Service, or by local authorities. Now after the war we're going to be engaged in another fight, a fight against disease; and we, the doctors, claim that the people who'll do the fighting, the medical experts, are the people who should be given the responsible place in directing the fight. We claim that at all stages the expert medical view should not only be available to the public but should be voiced effectively.

Matthews—You want a bigger say in running the scheme, and the chance of making your views known—well, to the whole public. Is that right?

Dain—That's exactly what we want.

Rucker—Well, but wait a minute. Surely there are several rather different points confused here, aren't there?- I really hardly believe Dr. Dain is quite serious when he suggests the analogy between the health service and the Army or the Navy or the Air Force; because don't you see what that would mean? It would presuppose that all the doctors, like the soldiers and the sailors and the airmen, were engaged as the direct servants of the state under strict discipline, and that's exactly what the profession (rightly, I daresay) do not want.

Dain—But as there's no need to get the whole service under a whole-time service, my point is just this. The doctors should direct the battle against disease, just as sailors, soldiers and airmen direct the battle against the enemy.

Rucker—I see. But isn't the real point this? How are we to marry together two quite different things. First, a reasonable public control of a public and national service, and second, a reasonable place for the guidance of the expert, the doctor, in the running of the service?

Dain—Yes, that's it. Yes, yes. And where the white-paper does not, in my view, go far enough, is that it allows us a certain amount of advisory freedom, but practically no power to see that our advice is taken. And I certainly don't think that's a satisfactory state of affairs.

Matthews—You mean you're afraid that the Minister, or whoever it is, will just ignore your advice if he doesn't like it?

Dain.—Yes, that's it.

Matthews—How would you like it fixed up, Doctor?

Dain—Well, the white-paper suggests an expert body to advise Ministers, including the doctors. I don't want the Minister to hand-pick his own doctors and so control the advice he gets. I want the profession to pick them. What's more, I don't want Ministers or Civil Servants to be able to conceal the advice they get. I want every committee to be able to publish the advice it gives to the Minister. After all, we've known advisory committees for a very long time. The Minister of Health had an advisory committee which he didn't call for 8 years. We want something that's efficient, must be called and must be heard.

Rucker—You know we really ought to be quite clear about this. I don't see how any Government could possibly accept all that might be implied in what you've just said. We're proposing a national service, provided out of the people's own money. The responsibility for managing it can't be just handed over to an organised profession or otherwise. The responsibility for the service must rest with the democratic machinery of central and local government answerable to the people whose service it is.

Dain—Yes, but all I'm asking is this. That the pure doctrine of democracy shall be diluted to the extent of securing that at least some of the people who plan health services know something about them. Hang it, why should you exclude doctors and nurses and dentists and others from playing a real part in the planning? To be elected at a general election does not necessarily qualify you to plan medical services.

Rucker—But nobody wants to exclude the doctors and the nurses and the dentists. Isn't the point this? The doctors may claim that the Minister should always act with the full knowledge and advice of the medical profession and its experts, and that it's not enough that he should be given advice. Parliament and the people must be able to judge whether he's acting reasonably on that advice or not.

Dain—Certainly they should.

Rucker—That's one point. The other one is this. That the Minister's professional advisers must be the right advisers. Well, these are just the things which the Government have tried to secure in the white-paper. To secure them they propose strong professional bodies, and they don't mean the advice of those bodies to be ignored.

Matthews—Well, yes, that's right. But you say you regarded the professional bodies as strong.

Dain—They are. But really the authorities need only write to them, ask their advice, get their reply, put it into the waste-paper basket and nothing else need be done.

Rucker— ... But the Government want to secure the best expert guidance in the whole of this scheme, and they intend that the guidance shall count—that there shall be no question of its just falling on stony ground. If the proposal in the white-paper on this point can be improved, well, so much the better. We've got to go over it all with the profession, with you, and discuss the whole scheme, and this point can be thrashed out.

Dain—Well it will certainly have to be thrashed out most thoroughly.

* * *

Matthews—Another thing—what about the voluntary hospitals? Some people think that when the scheme gets going, the voluntary hospital movement will just fizzle out.

Dain—Well what does the white-paper say about voluntary hospitals? It says to them, we will provide you with money, but less than it costs you to provide the service; find some money yourself. You'll have to do it without hospital contributory schemes, because in the white-paper we've virtually killed them. You'll have to do it in an atmosphere created

by the Government propaganda of service free for all.—How can they do it ?

Again the local planning of hospitals. It's to be done by a body on which they aren't even represented. County councils will play a big part in hospital planning. What's their record like ? Well, half of them have left their hospitals under the poor-law despite the opportunity they've had for 10 or 15 years to make them real hospitals. They're to be the planners of the future, while the voluntary hospitals are left out. These are just two of the points I could mention.

Rucker—I'll take issue with you on both of them. The Government have said to the voluntary hospitals "we'll leave you a margin of costs to make up from your voluntary supporters." Why ? Because they thought that if the hospitals were supported solely out of public funds, they wouldn't feel any longer that they were voluntary bodies. That was in the interest of the voluntary hospitals. But it's also in the Government's interest that the voluntary hospitals shouldn't lack money to carry out their services.

And what about this planning of the hospital system that you've mentioned ? You've got that point wrong too, Doctor, with respect. Of course the public responsibility for planning is put on the public authorities : it must be. But a full voice must also be given to the voluntary hospitals, and if the proposals for this can be improved in discussions with them so much the better. But don't let another bogy grow up, Doctor. The Government *do* want the whole experience and value of the voluntary hospitals in this scheme, and I'm sure we'll find the right way of getting it.

In England Now

A Running Commentary by Peripatetic Correspondents

MUCH has happened since, in 1940, we stood by to receive into our hospitals a first batch of casualties—from Norway—but there remains a vivid recollection of the event with its preliminary excitement, its bustle and chatter as the men poured in upon us. A colourful lot they were—Poles and French Foreign Legionaries, apparently drawn from the ends of the earth. Since then we have received so many convoys that now the imminence of another scarcely causes a ripple ; but this was something new, for we were to receive patients from London hospitals, acutely ill patients, as it was explained to us, but not children. When the ambulances arrived from the station the first cases to enter the hospital were six youngsters to whom all this bustle and transfer to the country was a new and thrilling experience. The children were soon followed by the rest of the party ; but surely never was there such a collection of "acutes" as this. Their average age seemed to be about 75. They were headed by an old lady of 94 who told us at considerable length, yet pithily enough, what she thought of her long trek from London. None of the patients knew where they were going, only that they were being taken away from the flying bombs, and it was not until they were far away from the city that their destination was revealed to them. Had they been young they might almost have echoed the popular song that they didn't know where they were going though there were lots and lots of rumours in the air. The patients were drawn from almost as many nationalities as had been our convoy from Norway four years earlier—French, Czechs and Poles, as well as British, but they were certainly all of mature years and in varying stages of decrepitude. It had been impressed upon us that we must send to the powers that be within 24 hours of arrival of the convoy a nominal roll with precise diagnosis. The latter presented almost less difficulty than the former for senility seemed to be of general enough application, supplemented here and there by a reference to some particularly obvious circumstance—deafness, blindness or mental instability. The patients seemed to have been drawn from two hospitals in the South. Those from one arrived with printed slips setting out the name of the patient and the sending hospital, diagnosis and useful information about such laboratory investigations as had been carried out : those from the other came without notes of any sort. Many were incontinent ; several were cases of advanced tuberculosis ; though many had been bedridden for years, none had bed-sores. Some of the patients were indeed so dottled that their whereabouts clearly made little difference to them, but already some were wondering whether they would ever see London or any of their friends again. Some hung anxiously to their few possessions ; a few seemed to have lost any clothes they had ever possessed ; some only clutched their bottles. It was only to be expected that these old folk would be considerably the worse for wear on their long train journey, but the great majority rallied well after a short period of rest.

Since then we have received some further cases from London, this time labelled chronic, though so far as we could see differing but little from the earlier batch in average age, duration of invalidity, or nature of illness. One essential difference was that the chronic batch brought with them nursings taff from London, armed with many winchesters (quarts ; not repeaters). Like the patients the staff had apparently had no indication of what their destination was likely to be and it was clear enough that some of them looked forward without much enthusiasm to a long stay away from the flesh-pots. They understood that arrangements had been made before they left London for their payment in the country and the slight delay in transmission of the necessary instructions naturally enough gave further cause for heartburn, as did the fact that conditions of service in the London hospitals from which they came had apparently been a good deal more generous than those under which our own nurses work. The arrival of our London patients has not been without its lighter side and many of them have told us that after all they quite enjoy being with us ; but their transfer is essentially tinged with sadness, and must raise many human and administrative problems if they are destined to remain long away from the London which has been their home and in which centres nearly all their interests.

* * *

The *Evening Standard* of August 24 makes the shattering statement that some British scientists, whom it does not name, have made hens lay eggs without shells by dosing them with sulphanilamide. Still more shattering is their statement that the scientists had expected this effect. Why on earth ? And who cares, anyway ? Not even the hens, for we are told that on resuming their customary diet they placidly returned to laying shell eggs.

* * *

J. G. Crowther's Pelican Book *Famous American Men of Science* (*1*) deals with Benjamin Franklin and Joseph Henry. Franklin was born 3 years before Dr. Johnson and 90 years after Shakespeare died. He was the greatest scientist of the 18th century. He made his money as a printer and was one of the earliest meteorologists. He was the first to study the absorption of solar radiation by coloured bodies and introduced rhubarb into America. He invented the terms "positive and negative electricity" and "electrical battery" and wrote a paper forestalling Malthus. He was agent for Pennsylvania in London American Ambassador to France and invented bifocal spectacles. He was the first to make a scientific study of the Gulf Stream and to suggest watertight bulkheads. He was an advocate of daylight-saving and may be deemed a great grandfather of wireless telegraphy. His son was illegitimate and so was his grandson and great grandson (no, no, not the wireless one). He was one of the framers of the Constitution and died at 84. Henry enriched world science in many directions and was head of the Smithsonian Institution for 32 years. A short biography of Smithson is included in this book. He was the illegitimate son of an English duke and was descended from Henry VII on his mother's side. Reading this book has affected my style and those who are near and dear to me say I am talking like a machine-gun.

PROPAMIDINE.—A correspondent points out that when discussing propamidine preparations it is essential to specify which compound is intended. Thus, in our annotation of June 17, it should be made clear that Valentine and Edwards were using a 0·15% solution of propamidine di-β-hydroxyethanesulphonate, whereas the previous workers referred to were using a 0·1% solution of propamidine dihydrochloride, which would contain the same concentration of propamidine base.

Letters to the Editor

NURSES AND TUBERCLE

SIR,—While the interim report of the Prophit Tuberculosis Survey confirms facts already known from the statistics of other countries, without breaking new ground, it brings into the open many aspects of a situation which demand frank discussion.

(1) In the medical entrance examination for nurses at some of our hospitals there is still nothing more searching than a clinical and stethoscopic examination. Surely, in the light of present-day knowledge, no nurse should be allowed to start her career in the wards without an initial chest X-ray photograph, or to continue it without serial radiograms at regular intervals.

(2) More information is needed as to how the nurse's duty periods in various stages of her hospital career compare with these radiological records and tuberculin tests, in order that we may know where danger lies. Time spent in the chronic tubercle blocks of general hospitals has already been shown to be not an infrequent period of infection. In some instances, at least, too long spells of night duty seem to be to blame. Two cases of pulmonary tuberculosis in nurses which I have recently seen in consultation with the physician had been on night duty for three and twelve months. Certainly the latter is too long. Is three months? Generally speaking I believe it is, though obviously much depends on the kind of nursing, on the ward, and on general conditions such as meals, rest hours or nights off duty.

(3) These considerations lead to the question: where should the Mantoux-negative nurse begin her training? The general opinion appears to be that she should not start in a tuberculosis ward, but there are often administrative difficulties in spacing out the training because nurses do not all become Mantoux-positive at the same speed. When the preliminary domestic-science training is lengthened perhaps we shall get more elbow-room and more time for preliminary observation.

(4) What should be done when the Mantoux-negative nurse becomes positive? There is a good deal of evidence that this is the time when she is liable to break down. In an ideal hospital scheme she would presumably go to the convalescent home branch for three months, so as to get through this period of readjustment to infection in the best environment; after which there seems no reason why she should not settle down to a steady level of reasonably safe Mantoux-positiveness like the rest.

(5) The record of the sanatoria is good, in spite of prejudice in certain quarters, but the general background of some hospitals still calls for improvement. We must not overlook the fact that the student nurse embarks on her career nowadays at the age of eighteen—or possibly even seventeen. I can remember the time when the age-limit for probationers was twenty-five in some hospitals. More facilities are required for open-air recreation, especially in those hospitals which must carry out their work in densely built-up or even slum areas, whilst the older types of building used for the accommodation of nurses leave much to be desired. The nurse student needs a well-designed college just as much as the woman undergraduate at the university. Again, we have not yet solved the problem of the utter boredom and sameness of institutional meals. And under the Rushcliffe scale it should now be possible for nurses of all grades to enjoy good holidays.

The Ridehalgh and Daniels investigations have blazed a trail in British nursing which should be followed up by more intensive inquiries.

London, N.W.1. S. ROODHOUSE GLOYNE.

SIR,—The Prophit Survey concerning the liability of nurses to contract tuberculosis points to the need for "very special care of the young nurse who is negative to the tuberculin test on entry" (*Times* report). No doubt the larger hospitals will be stimulated to give extra supervision and arrange for the periodical X-ray examinations, &c., which are suggested. There are however many smaller establishments, both publicly and privately run, where young girls are employed to work among acutely ill patients. For instance, a nurse with many years of sanatorium experience has recently left a small private sanatorium which receives county council patients. She found that girls of 16 and 17 (one, even, under 15) were employed as nurses and received no special instruction on personal care. The conditions were indeed so primitive and ill adapted to suitable nursing that she left in protest.

In the matter of hospital feeding it has been lately shown that the King Edward's Hospital Fund can play a very useful part in securing reform, and, as your leading article remarks, the fund's recent report on *The Supervision of Nurse's Health* draws attention to needs which the Prophit report now emphasises. Unless, however, small units come under more careful supervision than is at present exercised, there is no adequate protection for the girls who are being drawn in to fill the gaps caused by the general shortage of nursing recruits. County councils need beds so badly that they are by no means alert to make inquiries as to the conditions under which nurses are working. The improved pay now offered to girls starting to nurse may, indeed, be an allurement to disaster.

Your leader wisely comments on the differing interpretations of Mantoux findings, and on the unwisdom of attempting to draw conclusions from the still incomplete survey of the Prophit Research. Common sense must therefore be looked to for guidance in considering what conditions should govern the entry of young girls into nursing. Here surely certain indications are obvious, and the Prophit report indicates the most urgent in the words already quoted. Further, certain black spots in nursing require elimination—viz., the compulsory attendance at lectures after night duty, and the lack of relief from night duty before sitting for examinations; the lack of supervision of small hospitals or units where tuberculosis is nursed; and most of all, perhaps, the double strain of the student-cum-employee life, which is discreditable to our present system of nurse training.

The Prophit report may not confirm our worst fears, but it does little to increase our confidence that nursing has no special inherent risks.

Moor Park, Msx. ESTHER CARLING.

THE CULTIVATION OF SPECIALISTS

SIR,—I suppose what you call in your leader of Aug. 5 the "domestication of specialists" is bound to come, and somehow they must be earmarked, but I foresee the gravest risk to clinical medicine therefrom unless almost superhuman foresight, consideration, and sympathy are shown both by those who lay down the principles for each register and by those who keep it after. What they have specially to be careful to avoid is the manufacture of guilds for the protection of narrow minds that shall have crept into these folds. I want to put a word in for those men in the early thirties now away with the field units who had finished their appointments before the war and who wanted to start out as specialists. All this time they have been gaining that great experience from service in the field which tells a man who is a man and what a man is, but gives no opportunity for postgraduate study in the subject of their choice. It has been a higher education but not a specialist one. It should not be necessary for a man to have had this latter before being given a specialist post if he has had a good education in the arts of medicine and of life. I believe that there is room in any specialty for the independence of mind that a training in general principles provides.

At the present time there is no way for a man or woman to earn a living while learning a specialty. Voluntary hospitals do not pay their staffs, municipal hospitals do not have specialists posts in which graduates can learn their job and earn a living as they can in general medicine and surgery. In setting up the brave new world of health, we must alter this. There will be no private practice, therefore voluntary hospitals must pay their staffs for work done. But we need more than that—we need posts at municipal hospitals where a man or woman can start to learn a specialty and be paid while doing it, combining this with the work of an AMO. It is to posts such as these that the returning young men will have to look for their living and occupation. But there can be no question of their being given the rank and status they held before they left; they must be put in the positions they would have attained if

they had never gone away, and they must be put there forthwith. There can be no working up from junior posts under men and women five years younger, who because of their flat feet or for some other reason have been unable to go.

London, S.W.16. T. B. LAYTON.

THE CASE FOR THE SMALL SCHOOL

SIR,—You have already published a letter from past and present students of the West London Hospital pointing out the educational advantages of a small school. May I add that I, and probably all my colleagues here, have been equally impressed with the advantages of the small teaching unit over the large ones in which we were ourselves trained?

The Goodenough report has condemned this school to extinction on two counts. First, it is alleged that we should be redundant if their recommendation as to the admission of women students to all the medical schools of the University of London should be implemented; and secondly, that the possibilities of "expansion to an economical size" are too remote to justify our survival in the new order which is outlined. In commenting on these two findings I should like to start by saying that I and other members of the staff of this school with whom I have had the chance of discussing the report have nothing but admiration for the majority of its conclusions. But our experience, which is in many ways unique, suggests that perhaps too much stress has been put on "economical size."

The function of a medical school is to train practitioners of the art of medicine. Economical administration, adequate numbers of teaching beds, modern equipment and suitable buildings are not unimportant, but the essential nucleus of any teaching institution consists of its teachers and students. We have been fortunate here in our students, whose standard has been exceptionally high, and if examination results are any guide the teaching has been at least equal to that of any other school in London. From what I have heard of the careers of old students their professional attainments are in no way inferior to the products of other and larger schools. If efficiency rather than economic size is to be the criterion of survival there is perhaps a case for reconsideration of the recommendation of the Goodenough report with regard to the future of this school.

While appreciating the compliment paid to us in the report for our labours of the past seven years it is felt by some of us that the inclusion of this school in the group of "non-university" schools may lead to some misapprehension in the minds of those unfamiliar with the workings of the London schools of medicine. While it is true that the West London school is not as yet a "school of the university" the proportion of "university students" here is probably as high, if not higher, than in any other school in London. In fact we have only one student out of a total of 58 who is strictly a non-university student. This student is, incidentally, a prize winner and her non-university status was determined by circumstances outside her control.

Over 80 per cent. of our students are studying for the London MB and the university has been approached with a view to our becoming a school of the university. For two years our application has been under consideration but no effort has been made by the university authorities to ascertain by personal contact the quality of our work or the standard of training provided. Neither the University nor the Goodenough Committee have had any chance of comparing the teaching efficiency of this school with that of its older neighbours. It does not seem unreasonable to claim that the survival or disappearance of an established medical school should depend rather on the quality of its work than on purely economic factors.

Personally I view with some misgiving the proposal to standardise the size of all the medical schools in London. I feel sure that there would be a considerable outcry in educational circles if it were suggested that all public and secondary schools, or all Oxford and Cambridge colleges, should be enlarged or diminished to a standard size. The small educational institution has many virtues and is better suited to certain types of student than the large one. The only serious criticism of the small medical school, assuming that its teaching staff is adequate in numbers and teaching ability, would be that by its attachment to a small hospital the available clinical material might be insufficient. Small schools have remedied this defect by utilising material in adjacent hospitals, and I do not think that students here have suffered unduly in this respect (apart from the periodic evacuations necessitated by war conditions). The willing coöperation of the Middlesex and London county councils has enabled us largely to compensate for the small number of beds in our own hospital, and our outpatient department has always been one of the biggest in London. (The figures for 1938 given in the Goodenough report, pp. 279–285, show that this hospital had in that year the seventh largest outpatient department of the thirteen teaching hospitals.) The Committee was apparently impressed by the fact that the present site was not likely to be able to accommodate a hospital of more than 400–500 beds, but in fact there should be no difficulty in making available more than twice that number in institutions not more than ten minutes walk apart.

On the subject of coeducation we here are in complete agreement with the findings of the report. Although at the moment we are reserving our places exclusively for women because their need is so great we have tried coeducation and found no difficulties.

The Committee recommends the policy "of developing existing institutions to their full capacity before embarking upon any new institutions." It adds that "the supply of suitably qualified teachers ... will for a considerable number of years after the war be wholly needed for the full development of the existing schools." Surely it is rather a prodigal policy to choose such a time to abolish a unit of well-qualified and experienced teachers who have been remarkably successful under conditions far less favourable than those obtaining in the older grant-aided institutions.

West London Hospital Medical School. MAURICE SHAW.

PART-TIME SPECIALISM

SIR,—I am sincerely sorry to have given offence to Dr. Henderson in my support of an administration of which he disapproved. In reply to his letter in your issue of Aug. 19 criticising my remarks on part-time specialism, I would like to quote again my authority on the science of symbolism:

> "The same modifications of language are required for quite different reasons, and may be due to quite different causes. Hence the importance of considering the sentence in the paragraph, the paragraph in the chapter, the chapter in the volume, if our interpretations are not to be misleading and our analysis arbitrary" (Ogden and Richards, 1944).

Words like "prejudice" and "amateur" are examples of symbols whose meaning depends largely on the context in which they are used. "Prejudice" is often used in an uncomplimentary sense, but in classing Dr. Henderson as a "prejudiced specialist" I had hoped that it was obvious to every reader that no personal slight was intended, because I had so forcibly insisted, in an earlier section of my address, that everybody (including myself) must be unconsciously, if not consciously, prejudiced in their opinions on any subject in which they are interested, however rational and tolerant they imagine themselves to be.

In this supposition I was at fault, as Dr. Cooper in your issue of Aug. 12 also construed my defence as "a personal attack on a practising doctor." In some instances Dr. Henderson has so misunderstood and distorted my meaning that I find it impossible to recognise as mine the opinions which he attributes to me, either directly or by implication. This misunderstanding may have been due to my inadequate powers of exposition. All his relevant remarks are covered by my address, if it is read as a whole. I think there is only one point of general interest which might be made a little clearer—viz., it is possible for a part-time specialist to be, on the average, as skilful a craftsman, give as sound an opinion, and be as well trained as a whole-time specialist within the limits of his subject, experience, and type of practice. Many, perhaps the majority, of whole-

time specialists, including Dr. Henderson, consider this hypothesis is so manifestly false as not to be worth a second thought. On the other hand a few people, including myself, think this hypothesis is probably true, and anyhow worth an experimental trial under certain social conditions.

As Dr. Henderson correctly gathered from my discussion, I was doubtful myself of the truth of this hypothesis as of *general* application, because I had no means of finding out how far I was prejudiced in its favour by having been for most of my career a contented part-time specialist and a successful part-time amateur research worker. Meanwhile I do not think anyone need be alarmed that part-time specialism will ever find a place in a national health policy. Nearly all the leaders, teachers, and representatives of the medical profession are full-time specialists and are therefore unlikely to be "prejudiced" in favour of part-time specialism. But most orthodox full-time specialists are liberal-minded men who would welcome a few heretics in their council chambers, if only to avoid the dullness and sterility of discussions when everybody has the same sense of values and the same point of view.

SHELDON F. DUDLEY.

TRANSMISSION OF INFECTIVE HEPATITIS

SIR,—The idea that infective hepatitis might be transmitted by fæces has been put forward on various occasions. In the last war Willcox (*Brit. med. J.* 1919, i, 671) concluded that "the symptoms and ætiology point to an infection by the intestinal tract," and similar views on epidemic jaundice were given in the *Medical History of the War*. The same idea has been widely current in the present war, as I have already reported (*Brit. med. J.* 1944, i, 739), and it has been supported by the discovery that the virus of poliomyelitis is present in the fæces. Nevertheless, in view of the successful transmission of infective hepatitis by fæcal material reported by MacCallum and Bradley in your issue of Aug. 12 (p. 228), it seems only fair to add that experiments on similar lines were proposed in detail by van Rooyen and others in the Middle East in August, 1943, and would have been carried out there at that time, if it had been permitted to use military personnel for these purposes. Such permission could not be obtained. These projects had been before the MRC Jaundice Committee and the Middle East pathologists may feel a little disgruntled that others should have reaped a harvest they were forbidden to gather. We may dismiss all this as the fortune of war, but it nevertheless seems proper that this particular misfortune should be specially recorded.

L. J. WITTS,
Oxford. Chairman, MRC Jaundice Committee.

DOCTORS AND DEMOCRACY

SIR,—Is it not merely academic at this stage of the debate for Mr. Ralph Phillips to argue that it would be quite constitutional to confer upon a non-elective professional junta the executive control of the new National Health Service? None of his analogies of independent bodies, such as the MRC and BBC, fit this great scheme; they have all been considered and rejected because they could not be made to work.

Surely, Sir, this issue is really settled now in favour of the democratic solution set out in the White Paper? Every effort must be made to meet reasonable demands for professional freedom and representation, but I believe that, in due course, the doctors themselves will be thankful that there is a Minister of Health to take final responsibility to Parliament for a service which so intimately touches the lives of all our citizens. In any case this principle seems to me now to be settled and the problem before us is one of practice—i.e., how to evolve the best methods of recognising the vital place of the expert and the technician in this vast field of public effort. Towards this the white-paper contributes a good deal; it promises statutory recognition of mainly professional bodies at all the key points in the structure, both centrally and locally. There are the Health Services Councils to handle all scientific and medical questions and to assist with the basic planning. The Central Medical Board is a special gesture of goodwill towards the profession. For GPs it practically concedes the principle that doctors shall be managed by doctors and it is just the sort of illogical adaptation of our political democracy for which Mr. Phillips is pleading.

May I add that many of us laymen agree that, in the past, doctors have had unhappy experience of control by central and local government? If we thought that this was a sure presage of the future we would not support the white-paper's administrative plan. But we believe that a more enlightened spirit is now at work and I for one look upon the concessions I have listed above as most encouraging evidence of official goodwill and good intentions. Why not give them a fair trial?

London, W.11. RONALD DAVISON.

UNSUSPECTED TUBERCLE

SIR,—Your issue of Aug. 19 contains (p. 260) a note on the supplementary report of the standing advisory committee on tuberculosis to the Ministry of Health on the working of a mass radiography unit for the guidance of directors of units and tuberculosis officers. The following recommendations for assessing the radiological evidence are, it is stated, based on knowledge so far gained from mass radiography: (1) A calcified primary complex should be ignored. (2) Thickened pleura should be ignored, unless a parenchymatous lesion is visible. (3) If a large film of a subject suggests complete healing (calcification of all visible foci), no further investigation is necessary.

One is tempted to ask: who are these directors of units and tuberculosis officers to whom these directions are issued? Have they so little experience in assessment of radiological evidence that it is thought possible to instruct them in this way? One visualises that such men would be expected to look at the radiogram and then at instructions 1, 2, 3, for a decision how to act. But surely few experienced tuberculosis officers—or radiologists for that matter—would agree with any of the three recommendations, and I cannot think any one would consider the use of the word "ignore" wise, for it means that mass-radiographed individuals with these lesions would be dismissed as normal; they would have no clinical examination or recall for further radiography, though it is well known that such lesions do break down. Have the members of the expert committee not seen patients with these radiographic signs bearing unmistakable clinical evidence of active disease? If not surely they could get enlightenment from any sanatorium. Even since the publication of this report I have been consulted by a practitioner to whom a patient had reported because he "felt under the weather." From the clinical investigation tuberculosis of the lung was suspected and the patient was asked to bring the next morning's sputum. The pathologist's report on it was "Many tubercle bacilli." In order to ascertain the extent of the disease the patient was sent to a distinguished radiologist who reported "There is a calcified focus at the right apex—no evidence of any activity." As the practitioner said, "I am glad I made a clinical examination."

As these recommendations are "based on knowledge so far gained" with the mass radiography units, are they not a little immature? They are certainly not supported by another report, in the same issue of the *Lancet*, on Primary Tuberculous Infection in Nurses, which concludes with the statement "No radiological appearance is conclusive evidence of complete healing, though it may imply latency or quiescence," while earlier in the report we read "It is usually unwise to make a diagnosis of pulmonary tuberculosis on the evidence of a single film without corroborative, clinical or bacteriological, findings." Might I suggest that to exclude tuberculosis solely on the evidence of a single film, let alone a miniature photograph of the screen image, is equally unwise? Clinical investigations may be time-consuming and exacting, but I cannot think that, when well conducted by men who have made it a habit, they would be associated with the errors attendant upon their replacement by radiology, particularly the amateur variety.

From my own experience the infinite variety of radiographic appearance of disease of the lung defies description capable of assessment by the novice, and attempts of this nature, to say the least, confuse.

Edgbaston, Birmingham. JAMES F. BRAILSFORD.

Obituary

ARTHUR FREDERICK HURST

KT, D M OXFD, F R C P

THE sudden death of Sir Arthur Hurst on Aug. 17, while on a visit to a friend in Birmingham, removes one of the great figures of British medicine, a man whose life was an inspiring example of the conquest of ill health and physical disabilities. He did not attempt to enter the wider fields of national life or to shape governmental or even professional policies. At the Royal College of Physicians, although in turn Goulstonian lecturer, Croonian lecturer and Harveian orator, each time contributing something of unusual distinction, he held no office and seldom spoke in debate. Indeed, in later years his increasing deafness precluded such activities even had his inclinations led him that way. Hurst's success lay altogether in his professional work. To appreciate how deep and wide was the impress that he made on contemporary medical thought and teaching, both here and throughout the world, one must turn to the long list of books, articles and addresses which flowed from his pen from 1907 onwards. Among them are an astonishing number which have passed into the literature of medicine. There is hardly a branch of medicine, no matter how specialised, to which he did not contribute, though most of his writings were of neurological or gastro-intestinal interest, and he will mostly be remembered for his work on achalasia of the cardia, gastritis, peptic ulcer, ulcerative colitis, and subacute combined degeneration of the cord.

Vandyk, London

Arthur Frederick Hurst was born at Bradford in 1879, educated at Bradford and Manchester Grammar Schools, and at Magdalen College, Oxford, where he took a first in the final honours school of physiology. Going to Guy's Hospital in 1901 he won the Treasurer's gold medal in both medicine and surgery, qualified BM Oxfd in 1904 and next year was elected to a Radcliffe travelling fellowship. In 1907, after he had studied in Munich, Paris and America, he was appointed assistant physician to Guy's with charge of the neurological department, at the age of 27. Up to that time the physicians at Guy's, as elsewhere, had learnt from their great predecessors—Bright, Addison, Hodgkin—to correlate clinical findings with autopsy appearances. Their laboratory was the post-mortem room. It was a mine which had yielded much fine gold, but the precious metal was becoming exhausted, and Goodhart was soon to deliver an address on the passing of morbid anatomy. Of the older generation Pavy had stood almost alone, a laboratory worker while his colleagues were busied in the dead-house. Beddard, Spriggs and Hurst were the first at Guy's to bring to the bedside the methods learnt in the physiology school. Hurst had in supreme degree the faculty of seeing what lies behind everyday experience. He had the power of making himself not so much familiar with strange things as strange to familiar things. As a physiologist he had studied the work of Cannon at Harvard on the use of an opaque meal to record the shape and movements of the stomach in cats, and as Radcliffe fellow he had seen something of the kind attempted with the human stomach in Germany. At Guy's he began to apply the method to the study of the whole alimentary tract and the definition of different types of constipation. H. C. Cameron tells how in those early days he was writing a thesis on gastro-enterostomy, and Hurst suggested that he should use pellets of bismuth to show how the food left the stomach. Hurst's teacher, Cooper Perry, coined for him the word dyschezia for a failure in the last stage of defæcation. Here, at the outset of his career, was a striking example of the practical ends to which the investigations throughout his life were to tend. When he expounded his views on constipation to the recently formed Royal Society of Medicine the large hall of the building in Hanover Square was crowded.

Of men of learning it has been said, some absorb light, some reflect light, a few emit light. Hurst may claim a place among the select few. Such indeed was his enthusiasm that it sometimes carried him into mistakes which a slower and more critical approach might have avoided. In this respect there was a stimulating contrast between him and his contemporary at Guy's Patrick Laidlaw. Laidlaw, sitting somewhat apart, immersed in thought, often frustrated and at times unhappy, finding teaching a little irksome yet doing it scrupulously, devising experiments which culminated in unshakeable scientific proof. Hurst, surrounded always by a band of young workers and students, enjoying above all the exposition of his views as they grew from day to day, sometimes going too far—anti-dysenteric serum for ulcerative colitis is an example—yet ready to retract when the evidence was too strong for him, believing in others as he believed in himself, looking on most of his students and assistants as swans, always generous in sharing credit with his colleagues and juniors. Enthusiasm of his sort is the greatest of all assets to the teacher, and Hurst had no need to simulate keenness. Even when his ever-present enemy, asthma in its most severe form, made speech difficult, when his deafness had got to the pitch where he heard but few of the replies and questions addressed to him, he enjoyed it all to the full, and his "combined rounds" always drew an appreciative audience. The years hardly changed him: "Take away a little of his asthma and all his deafness," wrote a colleague in 1939, "and you have him as he was. Compared with his grey-haired contemporaries he still looks like a boy, sometimes perhaps like a rather tired boy who has been overdoing things a little, but still a boy." When Lord Dawson went to Guy's one day he told the students that he did not know which to admire most about their teacher, his intellect or his courage.

In the last war, as consulting physician to the British forces in Salonica, Hurst had to grapple with the great dysentery epidemic, and later at the Seale Hayne Hospital for functional nervous disorders he had an opportunity to exploit his remarkable power of influencing younger men. At Seale Hayne he treated the men whose experience of trench warfare had left them paralysed, anæsthetic, or incontinent of urine. His method was persuasion, insistent and persisted with until function was restored. The cure must be wrought at a sitting, however long it took; there must be no failures, for only in this way could the hospital's reputation among the patients be maintained. From the first Hurst showed astonishing proficiency in this task, and such was his power of inspiring his juniors that before long those who worked with him had developed almost equal powers. In the end results were obtained in minutes that would have taken hours at the start.

Guy's Hosp. Gaz.

"as if some superhuman force drove irresistibly that frail small body."—F. C. E.

Between the wars a large part of Hurst's time was spent at New Lodge Clinic, where he and his expert team could treat private patients as thoroughly as he did his hospital ones at Guy's at a reasonable inclusive charge. He made a point of being present at all operations, and it was an education to watch him at work with the proctoscope or sigmoidoscope. The clinic had built up a reputation among practitioners for thorough investigation and a sound opinion on their difficult cases. It closed when war broke out, and it is sad that with the deaths of Hurst and Venables must go the possibility of its reopening afterwards. He was given a knighthood in the Coronation honours of 1937. In the last few years he returned to Oxford, and acted as advisory physician to the Radcliffe Infirmary.

Apart from his books, of which the richest in ideas were perhaps his Constipation and Allied Diseases (1909), Psychology of the Special Senses (1920), Medical

Essays and Addresses (1924), Gastric and Duodenal Ulcer (with Matthew Stewart and P. J. Briggs, 1929) Constitutional Factor in Disease (1927), and the multitude of his contributions to the medical journals, his main memorial will be the *Guy's Hospital Reports*, which he edited from 1921 to 1939, and it was fitting that the *Reports* should publish a *Festschrift* on his retirement. Socially he was a good companion, with a buoyant gaiety which remained with him even when his frail body began to droop. Of small talk he had none, and he could be resolutely silent when there was nothing to say. If he was bored there was seldom any doubt about it. But those who knew how to interest him found an instant response. He was gifted in many ways besides medicine. As a young man he was an expert on the bobsleigh, and it was in Switzerland that he met Miss Cushla Riddiford of Hawera, New Zealand, who was to become Lady Hurst. He had an individual style of pin-head caricature, he painted charmingly in water-colour, and his portrait bust of Sir William Hale-White stands in the Royal Society of Medicine. He leaves a widow, a son and two daughters.

HENRY ALEXANDER FRANCIS

M B CAMB., M R C S

Dr. Alexander Francis, who for many years practised as an asthma specialist in Wimpole Street, died at West Hoathly on Aug. 13. Born at Brisbane in 1863, the third son of Arthur Morley Francis, a police magistrate and member of the Queensland Parliament he was educated at Brisbane Grammar School and entered St. John's College, Cambridge, in 1883. At Cambridge he was captain of the Lady Margaret boat club, won the Pearson and Wright sculls, and rowed in the University trial eights. Going on to St. Bartholomew's Hospital he worked under Savory, James Andrew and Howard Marsh. In his autobiography *Then and Now* (1935) will be found an entertaining account of Savory and his opposition to Lister. It was however as clinical assistant to his cousin, Greville MacDonald, at the Throat Hospital in Golden Square, that he became interested in what was to be his life work.

He took the MB Camb. in 1890, intending to return to Queensland; but before doing so he was told that the Cambridge degree was practically unknown in the Colonies, and if he did not have the letters MRCS, LRCP after his name people would think he was not properly qualified. So he stayed to take the Conjoint. For two years he was in charge of bush hospitals in the back-blocks of Queensland, where he was the only surgeon, physician and obstetrician for an area of 100 square miles—an experience, he always said, of inestimable value to him in later life. Then he started in Brisbane as an ENT surgeon, at that time an almost unknown specialty. It was here that his thoughts turned to asthma, and in his autobiography he gives a vivid account of how the treatment, later associated with his name, originated. On a visit to England in 1902 he told the Clinical Society about it, evoking much interest and not a little hostile criticism. His results however encouraged him to return to practise in this country, and for 40 years he expounded his views on the ætiology, symptoms and treatment of the disease at BMA meetings, in the medical journals, and in two books *Asthma in Relation to the Nose* (1903) and *Asthma and its Treatment* (1932).

Francis was essentially a fair-minded man and had the courage of his convictions; but he suffered from the disadvantage of having no hospital appointment in London, and his views on asthma never got the prominence in the profession which his success in treatment warranted. But he earned the gratitude of many thousands of patients whom he rescued from this most distressing complaint. In his life he was almost selfless; he spent it in helping others. On his 81st birthday, two days before he died, he was still seeing patients. He was twice married, and is survived by two daughters and a son who is also an ENT surgeon

J. J. A.

NORMAN MACLEAN LEYS

M B GLASG., D P H

Dr. Norman Leys, who died at Yalding, Kent, on Aug. 15, qualified at Glasgow University in 1900 and after taking the DPH went out to British Central Africa in the employ of the Lakes Company, later entering the Colonial Service at Makuru and Mombasa. He became a champion of native rights and in *Kenya*, which passed through several editions, set out in moderate language the shocking story of land speculators' evasion of the proclaimed government trusteeship. In the *Glasgow Herald* of Aug. 21 Prof. J. L. Morison relates how "like many of the nobler kind of Scot abroad ... Leys had the paradoxical Scottish characteristic of combining entire devotion to communities requiring help with complete disregard for conventional methods of administering that help." But, he adds, in 1914 he left Africa a beaten man. After his return Leys settled at Brailsford, near Derby, whence he had lately moved to the neighbourhood of Maidstone.

WILLIAM DE MALET PEYTON

OBE, M B DUBL.

Dr. Peyton died suddenly on Aug. 22, aged 55, while on his way to St. Thomas's Hospital, where he had worked in the venereal department for over 20 years. Son of John Hamilton Peyton of Castlebar, co. Mayo, he was educated there and at Trinity College, Dublin. After qualifying in 1913 and holding a house-appointment at Bradford Royal Infirmary, his life-work began when a major in the RAMC during the last war. Many will recall his assiduity as officer in charge of the syphilis division, No. 1 Stationary Hospital, BEF, dermatologist to No. 4 Stationary Hospital, and consultant in venereal diseases at the Rouen Base. He represented the BEF at the VD Conference of 1918, and was posted to the Rochester Row military hospital. For these services he was awarded the OBE. On leaving the Army he was appointed to the department at St. Thomas's, whose success, writes T. A.-D., was due in no small degree to his steadfast labours and his friendly tactful management. Possessed of a kindly nature, his cheerful banter humoured difficult patients, while awkward mothers were cajoled by his fondness for children. Technically expert, able and master of his specialty, his colleagues will retain a vivid memory of his genial personality. Few realised his versatility: he wrote several scholarly papers, including one on transverse myelitis (*Lancet*, 1925); during his college days he was an athlete of international reputation, holding the 100-yard championship for running in 1908; a talented musician, with a degree in music, he delighted his circle of friends with impromptu evenings at the piano. Dr. Peyton married Ellen Clarissa Stross, daughter of the last Austrian consul-general in Egypt. She survives him with the younger of their two daughters.

On Active Service

AWARDS

THE following appointments have been made in recognition of gallant and distinguished services in Italy:

CB

Brigadier STANLEY ARNOTT, DSO, MD EDIN., late RAMC.

CBE

Colonel C. H. PLAYFAIR, OBE, RCAMC.

OBE

Lieut.-Colonel W. C. ALFORD, MB GLASG., RAMC.
Lieut.-Colonel REGINALD ARMSTRONG, MB DURH., RAMC.
Colonel E. C. BEDDOWS, MC, MRCS, late RAMC.
Lieut.-Colonel J. A. BINNING, MB LOND., RAMC.
Lieut.-Colonel G. W. CRIMMIN, MB CAMB., RAMC.
Lieut.-Colonel A. L. D'ABREU, FRCS, RAMC.
Lieut.-Colonel I. D. EASTON, FRCPE, RAMC.
Colonel C. E. ECCLES, LRCPI, RAMC.
Lieut.-Colonel C. D. EVANS, MB CAMB., RAMC.
Colonel J. W. HIRST, MA CAMB., MRCS, RAMC.
Lieut.-Colonel F. H. HOLLINGSHEAD, MB BRIST., RAMC.
Lieut.-Colonel A. M. HUGHES, MC, MRCS, RAMC.
Lieut.-Colonel W. H. M. JONES, MB WALES, RAMC.
Lieut.-Colonel F. P. LEE LANDER, FRCP, RAMC.
Lieut.-Colonel W. D. F. LYTLE, MB LOND., RAMC.
Lieut.-Colonel A. S. PERN, MRCS, RAMC.
Lieut.-Colonel F. A. RODDY, MB DUBL., RAMC.
Lieut.-Colonel R. W. SCOTT, MB DURH., RAMC.
Lieut.-Colonel E. J. SELBY, RAMC.
Lieut.-Colonel R. W. D. TURNER, MD CAMB., RAMC.
Lieut.-Colonel R. B. WRIGHT, MB GLASG., RAMC.
Lieut.-Colonel R. C. DICKSON, RCAMC.

MBE

Major J. B. BARR, MD GLASG., RAMC.
Major GUY BLACKBURN, FRCS, RAMC.
Captain G. H. M. HEMSTED, MRCS, RAMC.
Captain ALEXANDER HENDERSON, MB ST. AND., RAMC.
Major C. D. P. JONES, FRCS, RAMC.
Major RALPH KAUNTZE, MB CAMB., RAMC.
Major D. G. LIVERSEDGE, MB LEEDS, RAMC.
Captain A. E. O'DONNELL, MB DUBL., RAMC.
Major W. R. WEST-WATSON, MB LOND., RAMC.

The following awards have also been made:

DSO

Major F. J. O'DOWD, MRCS, IAMC.

MC

Captain J. G. MACARTHUR, MB ABERD., RAMC.
Captain R. J. N. PELLOW, MRCS, RAMC.
Lieutenant F. H. LECKIE, LRCPE, RAMC.
Lieutenant THOMAS NOTMAN, LRCPE, RAMC.
Captain H. L. BHATIA, MB, IAMC.
Captain FRANCIS MARTIN, RCAMC.
Captain W. H. LANG, MB GLASG., RAMC.
Captain TERENCE MCCARROLL, MB GLASG., RAMC.
Captain L. J. SAMUELS, LRCPI, RAMC.

MENTIONED IN DISPATCHES

Major-General R. W. GALLOWAY, CBE, DSO, MB ABERD.
Brigadier W. P. CROKER, MD DUBL.
Lieut.-Colonel W. C. ALFORD, MB GLASG.
Lieut.-Colonel HAMISH ALLAN, MC, MB LOND.
Lieut.-Colonel W. M. CAPPER, FRCS.
Lieut.-Colonel R. W. HENDRY, FRCSE.
Lieut.-Colonel D. T. SWIFT, MB NZ.
Major J. W. L. BAIN, MB ABERD.
Major H. J. BELL, MB EDIN.
Major H. W. BURGE, MRCS.
Major D. J. CAMPBELL, FRCSE.
Major SYDNEY CARTER, MD DURH.
Major H. J. CROGHAN, MB NUI.
Major V. J. DOWNIE, MC, MB BIRM.
Major P. R. EVANS, MD MANC.
Major T. D. W. FRYER, MB CAMB.
Major C. C. HURST, MRCS.
Major J. IRVINE.
Major D. B. JAGGER, MB BIRM.
Major T. G. S. JAMES, MB CAMB.
Major J. G. JAMIESON.
Major J. W. LITCHFIELD, BM OXFD.
Major R. B. ROBERTSON, MBE, MB ST. AND.
Major J. MCL. ROSS, MB EDIN.
Major C. V. SALISBURY, LRCPE.
Major V. A. J. SWAIN, FRCS.
Major N. G. G. TALBOT, MB LOND.
Major ERIC TOWNSEND, MC, MD EDIN.
Major W. S. TULLOCH, FRCSE.
Major R. H. WEBBER.
Captain K. M. BELL, MB ABERD.
Captain A. M. BROWN.
Captain N. C. COOMBS, MRCS.
Captain F. H. COUNIHAN, MB DUBL.
Captain J. CUMMING.
Captain J. S. DAVIDSON.
Captain T. C. H. DAVIES, MB WALES.
Captain W. A. DEWAR, MB GLASG.
Captain F. R. DUGGAN, LRCPI.
Captain S. M. GILL, MB ABERD.
Captain J. G. GOW, MB LPOOL.
Captain C. J. HODSON, MB LOND.
Captain H. J. HOLLOWAY, MB BIRM.
Captain C. W. MARSHALL, MD LOND.
Captain R. D. RUTHERFORD, MRCS.
Captain R. W. TEMPLE, MB DUBL.
Captain H. A. WELLS, MB DUBL.
Lieut. R. H. HUGHES, MRCS.

MEMOIRS

Major C. F. RAINER, who died on August 1 from the after effects of an injury sustained on active service, was the eldest son of the late Mr. C. O. Rainer of Georgetown, British Guiana, and of Mrs. Rainer of Chertsey. He was educated at Kent College, Canterbury, and took his MRCS from the London Hospital in 1917. During the last war he served with the RAMC in Mesopotamia and later with the Army of Occupation on the Rhine. After his demobilisation he settled in practice at Herne Hill till, though nearing the age-limit, he voluteered once more early in the present war, and was appointed officer in charge of a reception station. He leaves his widow with a daughter, and a son now serving as a midshipman in the Royal Navy. W. D. C. writes: "A man of quiet retiring disposition Rainer was deeply religious and took an active interest in Methodist church affairs. His patients have lost a friend, as well as a physician whose skill and patience as an obstetrician were memorable."

Major L. R. JORDAN, who died in July of wounds received while operating at an advanced surgical centre in Normandy, was the youngest son of Mr. and Mrs. R. M. Jordan of Weston-super-Mare. He graduated MB at the University of Bristol in 1931 and passed his FRCS examination three years later, at the early age of twenty-four. He held house-appointments in Bristol at the Royal Infirmary and at the Royal Hospital for Sick Women and Children and later in London at the National Temperance Hospital. While studying for his fellowship he travelled as ship's surgeon to the West Indies, Panama and South America, returning to settle in practice as the surgical partner of a firm at Muswell Hill. Jorgan volunteered for service immediately on the outbreak of war but was not called up till the following October when he had already proved his worth as surgeon to the Hornsey Central Hospital during the early air-raids on London. He also acted as clinical assistant to the Central London Ear, Nose and Throat Hospital. In 1935 he married Miss Mollie Whalley of Burrough Green, Newmarket, and leaves her with one daughter. A. W. A. writes: Leslie Jordan was a born devotee of surgery. I enjoyed him as an enthusiastic student, and valued his help as house-surgeon, and later his professional comradeship. A sound clinician, he had a gentle friendly way with patients, and his life was one of steady, unstinted and able service.

Fendyk.

Surgeon Lieutenant G. N. DAVISON, missing since March, has now been posted as "missing, presumed killed." He studied medicine at Newcastle and graduated MB Durh., in 1936. After two years spent in resident posts at the Royal Victoria Infirmary and at the Newcastle General Hospital, his interest in the diseases of children took him to the Royal Manchester Children's Hospital. The day after war was declared he volunteered for the Navy and was commissioned in December, 1939. He early saw active service, taking part in the battle of Narvik and the evacuation at Dunkirk. After holding a shore appointment he was posted to the ship in which he and many of his friends were lost. To those who knew him well it is no surprise to learn that one of the ship's officers speaks of him as "a charming and efficient doctor, and as counsellor and adviser to the men extremely popular and successful. He undoubtedly contributed largely to the happiness of the ship's company." Outside his work, Davison's chief interest was in music and he was a musician of more than average ability. He married in February, 1940, Dr. Anna Nicol of Leven.

INFECTIOUS DISEASE IN ENGLAND AND WALES

WEEK ENDED AUG. 19

Notifications.—The following cases of infectious disease were notified during the week: smallpox, 0; scarlet fever, 1068; whooping-cough, 1603; diphtheria, 398; paratyphoid, 5; typhoid, 8; measles (excluding rubella), 1606; pneumonia (primary or influenzal), 345; puerperal pyrexia, 134; cerebrospinal fever, 34; poliomyelitis, 14; polio-encephalitis, 1; encephalitis lethargica, 1; dysentery, 248; ophthalmia neonatorum, 58. No case of cholera, plague or typhus fever was notified during the week.

The number of civilian and service sick in the Infectious Hospitals of the London County Council on Aug. 16 was 803. During the previous week the following cases were admitted: scarlet fever, 21; diphtheria, 14; measles, 16; whooping-cough, 29.

Deaths.—In 126 great towns there were 2 (0) deaths from enteric fevers, 1 (0) from scarlet fever, 2 (0) from measles, 3 (3) from whooping-cough, 8 (0) from diphtheria, 58 (4) from diarrhœa and enteritis under two years, and 5 (1) from influenza. The figures in parentheses are those for London itself.

Portsmouth and Gloucester each reported 1 death from an enteric fever. There were 6 fatal cases of diarrhœa at Birmingham.

The number of stillbirths notified during the week was 226 (corresponding to a rate of 34 per thousand total births), including 14 in London.

Notes and News

MORE DALTON REMINISCENCES

Dr. E. M. Brockbank has supplemented his historical notes (1906) of John Dalton's life in Manchester with a collection of unpublished letters and miscellanea (Manchester Univ. Press, 7*s.* 6*d.*), timed to appear on the 100th anniversary of his death (July 27, 1844). He was moved to pay this tribute by the destruction from enemy action in 1940 of the district in which Dalton lived and worked for forty years. The notes may not add much to the origin of the atomic theory or the genesis of colour-blindness, but they capture the spirit of the tall, gentle, uncouth scholar who could reply "Well, I don't know, just middlin'" to his Sovereign's inquiry after his welfare; whose head was "too full of triangles" to think of marriage; who went to every meeting of the British Association leaning on the arm of Peter Clare, the Quaker clock-maker, whose timepieces were so accurate that the cock crowed by them. The reader can learn the present habitat of the poor shrivelled eye which Mr. J. A. Ransome, FRCS, removed by request after Dalton's death to see whether the clue to colour-blindness could be found in it; he will discover for whom Dalton wrote the *Elements of English Grammar* which contains the wittiest of all grammatical slips—phenomenon, *feminine* phenomena; and he may enjoy again Ford Madox Brown's inimitable fresco of a group of young Mancunian pond-fans helping Dalton collect marsh gas.

THE RUSSIAN ACB SERUM

THE Empire Rheumatism Council has carried out tests with the small supply of ACB serum sent from Russia by Professor Bogomoletz, and the results do not justify a favourable verdict. The best that can be said is "not proven." Nevertheless, with more detailed information on the optimum methods of employment and some lead as to the type of rheumatic disease for which the serum is best adapted, the claim advanced for it may be substantiated. So soon as war conditions in Europe allow, the council propose either to invite a representative of Professor Bogomoletz to visit England, or to send a research scientist to Russia to make further investigations. Meanwhile the council cannot recommend its use.

Society of Apothecaries of London

At a meeting of the court of assistants held on Aug. 15, with Mr. L. Vernon Cargill, deputy master, in the chair, Dr. J. P. Hedley was elected master for the ensuing year, and Dr. H. F. Powell and Dr. C. T. Parsons wardens. Rear-Admiral C. P. G. Wakeley succeeded Sir Hugh Lett as representative on the governing body of the British Postgraduate Medical School; Dr. H. Seaward Morley was appointed representative on the negotiating body of the British Medical Association; and Dr. D. H. Geffen, examiner in public health for the mastery of midwifery examination.

The honorary diploma of the Society was bestowed upon Sir Buckston Browne, and the diploma was granted upon examination to the following:

D. Cappon, E. A. Humphrey, I. W. Williams, L. J. Wood. R. W. Barr-Brown, K. R. J. Coates, N. J. Caldwell, T. H, Eustace, I. P. D. W. Skempton, A. E. Buck, and A. H. Pote.

Department of Child Health at Liverpool

Dr. NORMAN CAPON has been appointed professor of child health and part-time director of this new department which the Minister of Health is to open in the autumn. The university, the city council and the children's hospital are to share the cost of the department, which is to be housed at the City and Heswall branches of the Royal Liverpool Children's Hospital and at the Alder Hey Children's Hospital. Members of the staffs of these two hospitals have been appointed as part-time and full-time officers of the department.

Dr. Capon, who is 52 years of age, was educated at Liverpool College and graduated MB at Liverpool University with first-class honours in 1916. After serving with the RAMC in Egypt and Palestine he returned to Liverpool in 1920 and the following year took his MD. He had already chosen his specialty, and the experience he gained as house-surgeon at the Liverpool Infirmary for Children and as Ethel Boyce fellow in gynæcological pathology at the university confirmed his choice. His appointment to the staff of the Royal Southern Hospital followed in 1925, and in due course he became physician to the children's hospital and visiting physician at Alder Hey. But in the midst of his clinical practice he was careful to spare time for research and teaching, and he was also a part-time worker for the Medical Research Council and lecturer in clinical medicine and later in diseases of children at the University. Dr. Capon's original papers range from such subjects as œdema of the fœtus and intracranial traumata (1923) to hæmorrhagic diseases of the newborn (1937). He has also contributed chapters to Parsons and Barling's *Diseases of Infancy and Childhood*, to Garrod, Batten and Thursfield's *Diseases of Children* and to Chamberlain's *Symptoms and Signs in Clinical Medicine*. In 1931 Dr. Capon was elected to the fellowship of the Royal College of Physicians of London and in 1941 he was appointed Milroy lecturer. He is an original member of the British Pædiatric Association.

Course on Industrial Medicine

Six lectures for industrial medical officers, works managers, welfare officers and nurses will be given at the medical school of Birmingham University at 4 PM on Mondays and Tuesdays during September. On Sept. 11 and 12, Dr. E. Baylis Ash and Dr. Cranston Walker will speak on industrial dermatitis; on Sept. 18 and 19, Prof. Hamilton Hartridge, FRS, on vision and colour vision; and on Sept. 25 and 26, Dr. C. S. Hallpike on deafness. Applications to the secretary of the university, Edmund Street, Birmingham.

Appointments

HUNT, A. J., DM, M CH OXFD, FRCS: temp. hon. surg., Metropolitan Hospital, London.

London County Council.—The following appointments are announced:

DORLING, G. C., FRCS: deputy med. supt. (class I) and senior resident surgeon, St. Mary Abbots Hospital;

GILLIES, J. C., MB GLASG., FRCSE: deputy med. supt. (class I) and senior resident surgeon (temp.), Hackney Hospital;

MATHESON, I. W., FRCS: deputy med. supt. (class I) and senior resident surgeon (temp.), St. Giles Hospital;

KEY, L. A., BA CAMB., MRCS: deputy med. supt. (class I temp.), Queen Mary's Hospital for Children, Carshalton;

ASTON, H. C., MB BIRM., MRCP: deputy med. supt. (class III) and senior resident physician (temp.), Mile End Hospital;

MCCREA, A. N., MB CAMB., FRCS: deputy med. supt. (class II) and senior resident surgeon (temp.), St. Charles Hospital;

SIMMONS, J. H., MD LOND., MRCP: physician specialist (temp.) and deputy to med. supt., Lewisham Hospital;

JEMSON, JAMES, FRCS: surgeon specialist, Lewisham Hospital;

COCHRANE, H. L., MB BELF., FRCS: deputy med. supt. (class II) and senior resident surgeon (temp.), Fulham Hospital;

EVANS, J. C. MRCP: med supt. (temp.), St. Charles Hospital;

RONALDSON, G. W., MD GLASG., DPH: med. supt., South Eastern Hospital, acting at Park Hospital; and

REID, J. O., MD EDIN.: med. supt. (temp.), Highgate Hospital and part-time to EMS sectors 6 and 7.

Births, Marriages and Deaths

BIRTHS

ELWELL.—On Aug. 26, in London, the wife of Captain J. R. Elwell, RAMC—a son.

DAVIES.—On Aug. 17, at Barnet, the wife of Dr. J. Vernon Davies—a son.

RICHARDS.—On Aug. 19, at Exeter, the wife of Captain A. Guyon Richards, RAMC—a son.

SCOTT.—On Aug. 24, at Aberdeen, the wife of Major W. A. McD. Scott, RAMC—a son.

SMITH.—On Aug. 21, at Glasgow, the wife of Major John Smith, RAMC—a son.

WILKIN.—On Aug. 17, at Cambridge, the wife of Dr. James Wilkin—a son.

WRIGHT.—On Aug. 24, at Farnborough, Kent, to Dr. Helen Payling Wright (née Goddard), the wife of Prof. G. Payling Wright, FRCP—a son.

MARRIAGES

CALDERWOOD—NICHOLS.—On Aug. 5, at Manor Park, Raymond W. L. Calderwood, MRCS, lieutenant RAMC, of Wanstead, to Mabel Edna Nichols, of Ilford, Essex.

ELLIOTT—LOCKYER-HOLMES.—On Aug. 17, at Benfleet, Essex, John Reginald Elliott, surgeon lieutenant RNVR, to Margaret Elizabeth Lockyer-Holmes.

FOXEN—MACDONALD.—On Aug. 4, at Edinburgh, E. H. Miles Foxen, captain RAMC, to Elizabeth Jonathan Macdonald, of Southport.

JAMESON—GLEN.—On Aug. 22, at Edinburgh, J. E. Jameson, major RAMC, to Marjory Elizabeth Glen.

PUNT—MOORE.—On Aug. 12, at Brightlingsea, Norman Arthur Punt, MRCS, to Gwendoline Phyllis Moore.

PYPER—BRIGHTMAN.—On Aug. 10, at Alexandria, J. Graham Pyper, captain RAMC, to Patricia Brightman, ATS.

SIMPSON—MEREWETHER.—On Aug. 24, at Welwyn, Herts, Robert Arthur Hyem Simpson, surgeon lieutenant RNVR, to Moira Merewether.

DEATHS

BERKELEY-HILL.—On Aug. 16, at Ranchi, India, Owen Alfred Rowland Berkeley-Hill, DM OXFD, lieut.-colonel IMS, aged 64.

HEWER.—On Aug. 25, at Sevenoaks, Joseph Langton Hewer, MD LOND., FRCS.

MCMUNN.—On Aug. 15, Andrew McMunn, OBE, LRCPI, lieut.-colonel RAMC, retd, of Finsbury Pavement, London, E.C.2, aged 71.

PANTIN.—On Aug. 18, at Douglas, I.o.M., Charles Satchell Pantin, OBE, MD LOND., FRCS.

PEYTON.—On Aug. 22, William de Malet Peyton, OBE, MB DUBL.

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References: Jour. of Mental Science, Jan. 1941; Jour. of Mental Science, Jan. 1942; Practitioner, Sept. 1942.

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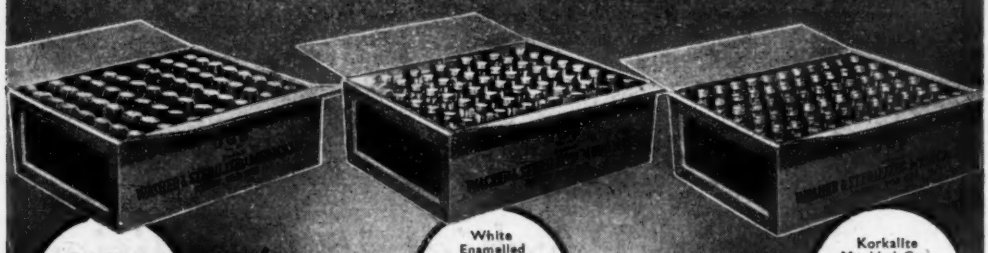

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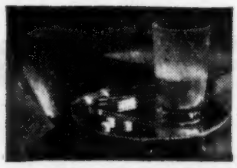

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5th July, 1944.

L. M. S. S. A.

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HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.3. Applications are invited from registered medical practitioners, Male and Female, including suitably qualified R and W practitioners who now hold B2 posts, for the appointment of RESIDENT SURGICAL OFFICER (B1). Applicants must have held a resident hospital appointment, and R practitioners now holding B1 posts cannot be considered unless they have been rejected by the R.A.M.C. The appointment is for 12 months, commencing on 1st November. Salary at the rate of £150 p.a., with board and residence, and an additional £25 p.a. for services in connexion with paying patients.

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HOUSE PHYSICIAN (B2). The duties include work in the Out-patient Department as well as in the wards, and the appointment is for 6 months, commencing on 1st November, with an honorarium of £50 and board and residence.

HOUSE PHYSICIAN (B2) at the Sanatorium at Frimley. The appointment is for 6 months, commencing on 1st November, with an honorarium of £50 and board and residence.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 1 or more recent testimonials, should reach the undersigned not later than Saturday, 9th September, 1944.

Brompton. F. G. ROUVRAY, Secretary.

THE ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. Applications are invited from registered medical practitioners, Male or Female, for the appointment of PART-TIME REGISTRAR to the E.N.T. Department, at a salary of £100 p.a. Appointment to commence approximately 15th September.

Applications for this appointment, with copies of 3 testimonials, to be sent to the Secretary by Wednesday, 6th September.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN (Country In-patient Branch. 70 Beds.) Ashendene, Bayford, Herts. Applications are invited from registered medical practitioners, Male and Female, including R and W practitioners now holding A posts, for the appointment of RESIDENT MEDICAL OFFICER (B2), vacant 1st October, 1944. The appointment will be for 6 months. Salary is at the rate of £200 p.a., with full residential emoluments.

Application forms may be obtained from the undersigned, and should be returned, with copies of not more than 3 testimonials, on or before 16th September, 1944.

CHAS. H. BESSELL, General Secretary.

Queen Elizabeth Hospital, Hackney-road, E.2.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN, Hackney-road, E.2. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (A), vacant 1st October, 1944. Appointment will be for 6 months. Salary at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Application form may be obtained from the undersigned, and should be returned, with copies of not more than 3 testimonials, on or before the 16th September, 1944.

CHAS. H. BESSELL, General Secretary.

WEIR HOSPITAL, Weir-road, Balham, S.W.12. Applications are invited from registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON (B2), vacant now. Salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months.

Applications should be sent to the Honorary Secretary-Superintendent.

THE SOUTH LONDON HOSPITAL FOR WOMEN, Clapham Common, S.W.4. Applications are invited from registered medical Female practitioners for the undermentioned appointment, vacant 1st October: HOUSE PHYSICIAN (A). The appointment will be for a period of 6 months. Salary is at the rate of £100 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of 3 recent testimonials, should be sent to the Secretary at the hospital by Saturday, 16th September, 1944.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of HOUSE SURGEON (A). Salary is at the rate of £120 p.a., plus share of Ministry of Health allowance, with full residential emoluments. Duties to commence as soon as possible. To R and W practitioners the appointment will be for a period of 6 months.

Applications, giving full particulars, together with copies of 3 recent testimonials, to be sent as soon as possible to—

18th August, 1944. R. EDWARDES, Secretary.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners, Male and Female, for the resident appointment of FRACTURE OFFICER (B1) for Out-patient Fracture Clinic, vacant 1st September, 1944. Duties will include work in the Rehabilitation Department. Preference will be given to candidates who have had previous experience in dealing with fractures. Salary at the rate of £250 p.a., with the usual residential emoluments. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, giving full particulars, together with copies of 3 recent testimonials, to be sent as soon as possible to—

18th August, 1944. R. EDWARDES, Secretary.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant 1st November, 1944. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Salary is at the rate of £550 p.a. Subject to appointment by E.M.S. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and have been rejected by the R.A.M.C., may apply.

Form of application can be obtained from—

24th August, 1944. R. EDWARDES, Secretary.

WEST LONDON HOSPITAL, Hammersmith, W.6. Applications are invited from registered medical practitioners, including R and W practitioners who now hold A posts, for the appointment of RESIDENT ANÆSTHETIST AND AURAL AND OPHTHALMIC HOUSE SURGEON (B2), vacant 1st October. The appointment will be for a period of 6 months and may be terminated by 1 month's notice on either side. Salary according to experience, but not less than £100 a year, with the usual residential emoluments.

Applications, with particulars of age, nationality, medical school, qualifications with dates, experience, and accompanied by copies of 3 testimonials, should reach me not later than 14th September. H. A. MADGE, Secretary.

WEST LONDON HOSPITAL, Hammersmith, W.6. House SURGEON (A) required at once. Applications for this post are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts. The appointment will be for a period of 6 months. Salary is at the rate of £100 p.a., with the usual residential emoluments.

Applications, accompanied by copies of 3 recent testimonials and stating age, medical school, qualifications with dates, nationality, and experience, should be sent immediately to—

H. A. MADGE, Secretary.

THE LONDON HOMŒOPATHIC HOSPITAL (Incorporated by Royal Charter), Great Ormond-street and Queen-square, W.C.1. Applications are invited from registered medical practitioners (Male and Female) for the appointment of HOUSE SURGEON (A), vacant 18th September, 1944. The appointment will be for a period of 6 months. Salary is at the rate of £180 p.a., with full residential emoluments. Selected candidates will be required to attend a meeting of the Medical Committee for interview. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications to: L. J. KNOWLES, Secretary.

KING'S COLLEGE, Strand, London, W.C.2. (University of LONDON.) King's College, London, will require in October next the services of a part-time LECTURER IN ANATOMY (3 afternoons a week). Salary £150.

Application should be made to the Secretary, King's College, Strand, W.C.2, on or before 13th September, 1944.

ROYAL CANCER HOSPITAL (Free), Fulham-road, LONDON, S.W.3. Applications are invited for the post of JUNIOR ASSISTANT RADIOTHERAPIST (B2). Salary according to experience but will not be less than £450 p.a. Applicants must be registered medical practitioners who hold a diploma in Medical Radiology. The appointment will be for a period of 12 months and subject to renewal, but to R and W practitioners holding A posts who may apply appointment will be limited to 6 months.

Applications to be made on a form which will be supplied by the Secretary, together with copies of 3 recent testimonials, which should be sent to the Secretary by Monday the 11th September.

TILBURY HOSPITAL, Tilbury, Essex. Applications are invited from registered Male practitioners for the appointment of RESIDENT HOUSE SURGEON AND CASUALTY OFFICER (B1), vacant on or before 11th September. Applicants should have held appointments and had surgical experience. Salary is at the rate of £350 p.a., with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, also those holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications with dates, experience, and details of previous appointments, with copies of 3 recent testimonials, should be sent to the undersigned immediately.

F. A. LYON, Administrator and Secretary.

Seamen's Hospital Society, Greenwich, S.E.10.

HIS MAJESTY'S COLONIAL SERVICE

THE COLONIAL MEDICAL SERVICE

VACANCIES FOR MEDICAL OFFICERS

The maintenance of an efficient Colonial Medical Service constitutes a vital part of the national war effort and it is most important that the Service should be assured of an adequate supply of doctors.

The Secretary of State for the Colonies therefore invites applications from doctors possessing a medical qualification registrable in the United Kingdom who are British subjects and who are under thirty-five years of age.

Medical Officers are appointed in the first instance for general service. But there are ample opportunities for work in special branches of medicine and surgery, in public health and in medical research.

The normal salary scale is from £600 to between £1,000 and £1,120. There are large numbers of super-scale posts to which promotion is made on merit and which carry higher salaries.

Government quarters, in many cases free of rent, and first-class passages to and from the Colonies are provided, and an adequate pension scheme is in force.

Selected candidates are normally required to attend a course of instruction in Tropical Medicine and Hygiene either before proceeding overseas or during their first period of leave.

Further particulars, including the regulations governing admission to the Colonial Medical Service, may be obtained from the Director of Recruitment (Colonial Service), 2, Park-street, London, W.1.

MIDDLESEX COUNTY COUNCIL. Visiting Radiologist required at Central Middlesex County Hospital, Park Royal, N.W.10, for 3 sessions weekly of approximately 3 hours each. Fee £3 3s. per session. Further particulars obtainable from Medical Director. Appointment, in first instance, is for period of emergency only.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to be made to the undersigned. Application forms not provided. Closing date 9th September, 1944. C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Assistant Pathologist (non-resident) required by West Middlesex County Hospital, Isleworth, Middlesex. Applications invited from registered medical practitioners with special knowledge and experience in hæmatology, biochemistry, and bacteriology. Commencing salary £650 p.a.; annual increments of £25 up to £800 p.a. considered. Additional cost-of-living bonus (now £50 p.a.). No other emoluments. Whole-time duties, such as County Council may require, under general supervision of Medical Director. Appointment unestablished, with possibility of becoming established later.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to be made to the undersigned. Application forms not provided. Closing date 9th September, 1944. C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Resident Assistant Medical OFFICER (B1) required by Harefield County Hospital, Harefield, Middlesex. Applications invited from registered medical practitioners who have held house appointments (including R and W practitioners holding B2 posts). Experience in chest work desirable. R and W practitioners ineligible unless rejected by R.A.M.C. Salary £400 by £25 to £475 p.a., plus cost-of-living bonus (now 19s. per week, less deduction for residential emoluments). Board, lodging, and laundry. Whole-time duties, such as Council may require, under supervision of Medical Director. Appointment is for 4 years only, subject to medical examination and 1 month's notice. Post vacant now.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to be made to the undersigned. Application forms not provided. Closing date 9th September, 1944. C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

MIDDLESEX COUNTY COUNCIL. Resident Assistant Medical OFFICER (Anæsthetist, B1) required by North Middlesex County Hospital, Edmonton, N.18. Applications invited from registered medical practitioners (including R and W practitioners holding B2 posts) who have held resident appointments in general hospitals and had special experience in administering anæsthetics. Preference given to candidates with Diploma in Anæsthetics. R and W practitioners holding B1 posts ineligible unless rejected by R.A.M.C. Salary £400 by £25 to £475 p.a., plus cost-of-living bonus (now 19s. per week, less deduction for residential emoluments). Board, lodging, and laundry. Whole-time duties, such as Council may require, under general supervision of Medical Director, will consist mainly in administering anæsthetics. Appointment is for 4 years only, subject to medical examination and 1 month's notice. Post vacant immediately.

Applications, stating age, nationality, qualifications, present post and previous experience, and enclosing copies of not more than 3 recent testimonials, to be made to the undersigned. Application forms not provided. Closing date 9th September, 1944. C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

WEMBLEY HOSPITAL, Middlesex. (118 Beds.) Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant immediately. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Salary between £450 and £550. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and have been rejected by the R.A.M.C., may apply.

Applications should reach the undersigned as soon as possible.

28th August, 1944. P. E. WINDO, Secretary.

MIDDLESEX COUNTY COUNCIL. 2 Assistant Medical Officers (B1), resident, required at West Middlesex County Hospital Isleworth, Middlesex, (*a*) for surgical duties (Men only); (*b*) for medical duties (Men or Women). Applications invited from registered medical practitioners, including R practitioners (or R and W practitioners for (*b*)) who now hold B2 posts. R and W practitioners holding B1 posts ineligible unless rejected by R.A.M.C. Salary £400 by £25 to £475 p.a., plus cost-of-living bonus. Board, lodging, and laundry. Whole-time duties, such as Council may require, under supervision of Medical Director. Appointment is for 4 years only, subject to medical examination and 1 month's notice. Post now vacant.

Applications, stating age, nationality, qualifications, present post, and previous experience, enclosing copies of not more than 3 recent testimonials, to the undersigned. Application forms not provided. Closing date 16th September, 1944.

C. W. RADCLIFFE, "B3," Clerk of the County Council.

Middlesex Guildhall, Westminster, S.W.1.

("Men only" is necessitated by lack of resident accommodation for women.)

HOUNSLOW HOSPITAL, Staines-road, Hounslow, Middlesex. Applications are invited for the post of HOUSE PHYSICIAN AND CASUALTY OFFICER (A). Duties to commence 18th September. Salary £150, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications should be addressed as soon as possible to—

E. H. HURST, Secretary.

CUMBERLAND INFIRMARY, Carlisle. (367 Beds.) Applications are invited from registered medical practitioners for the following posts vacant from 1st October next:—

1 HOUSE SURGEON (B2), including R and W practitioners who now hold A posts.

1 HOUSE SURGEON (A), including practitioners within 3 months of qualification and liable under the National Service Acts.

Appointments will be for a period of 6 months. Salary is at the rate of £160 p.a., with board, &c.

Applications should be sent to the Secretary-Superintendent immediately.

Carlisle, 9th August, 1944.

THE STOCKPORT INFIRMARY. (159 Beds.) Applications are invited from registered medical practitioners for the appointment of ASSISTANT RESIDENT SURGICAL OFFICER (B1), vacant 1st September. Applicants should have held house appointments and had surgical experience. Salary is at the rate of £175 p.a., with full residential emoluments. Suitably qualified R practitioners holding B2 appointments, and those now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications, and experience, with copies of 3 recent testimonials, to be sent forthwith to—

H. G. PRICE, Secretary-Superintendent.

WREXHAM AND EAST DENBIGHSHIRE WAR MEMORIAL HOSPITAL, WREXHAM. Applications are invited from registered medical practitioners, Male and Female, for the following 6 months' appointments:—

RESIDENT HOUSE SURGEON (B2), to commence 1st October, 1944. Salary is at the rate of £250 p.a., with full residential emoluments. R and W practitioners holding A posts may apply.

2 RESIDENT HOUSE SURGEONS (A), to commence immediately. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, nationality, qualifications, and accompanied by copies of testimonials, to—

LESLIE SPENCER, Secretary.

HALIFAX GENERAL HOSPITAL. (A1—400 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of RESIDENT MEDICAL OFFICER (B2) at a salary of £200 p.a., together with the usual residential allowances. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise may be renewed for a further period of 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent to the Medical Superintendent.

COUNTY BOROUGH OF MIDDLESBROUGH. Middlesbrough General Hospital. Applications are invited from registered medical practitioners for the appointment of ASSISTANT RESIDENT MEDICAL OFFICER (B2). The salary is at the rate of £270 p.a., together with full residential emoluments. In addition to hospital duties the successful candidate may be required to undertake relief or holiday duties for other whole-time members of the Corporation Medical Staff. The General Hospital contains 353 beds, and is a training school for nurses. The appointment is subject to the rules and regulations of the Middlesbrough Corporation, and the successful candidate will be required to pass satisfactorily a medical examination. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise will be for a period of 12 months.

Applications, stating age, qualifications, nationality, and particulars of present appointment and experience, accompanied by copies of 3 recent testimonials, to be sent to the Medical Officer of Health, Municipal Buildings, Middlesbrough, not later than Tuesday, 5th September, 1944.

PRESTON KITCHEN, Town Clerk.

Municipal Buildings, Middlesbrough, 19th August, 1944.

WALSALL GENERAL HOSPITAL. (181 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of CASUALTY OFFICER AND ORTHOPÆDIC HOUSE SURGEON (B2). Salary is at the rate of £200 a year, with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be forwarded immediately to—

22nd August, 1944. N. M. AULT, Acting Secretary.

LEEDS PUBLIC DISPENSARY AND HOSPITAL. Applications are invited from registered medical practitioners for the appointment of HOUSE PHYSICIAN (A), to include casualty duties. Appointment for 6 months. Salary at the rate of £150 p.a., with board, residence, and laundry. Practitioners within 3 months of qualification and liable under the National Service Acts may also apply.

Applications, stating age, qualifications, and nationality, and accompanied by copies of 3 recent testimonials, to be addressed to: CHARLES F. J. MAURY, Secretary and Superintendent.

WEST RIDING COUNTY COUNCIL. Applications are invited from qualified women for 2 appointments of ASSISTANT SUPERVISORS OF SCHOOL MEALS. The duties will be mainly connected with the provision of meals at School Canteens and other educational institutions, and the persons appointed will be required to advise on questions of diet, staffing, equipment, and general organisation. Candidates should have experience in large-scale catering and expert knowledge of dietetics. An appropriate degree and experience of administration and organisation will be a recommendation. Salary £300–£15–£400. The posts are pensionable.

This advertisement is issued with the approval of the Ministry of Labour and National Service, and is not subject to any age restrictions.

Application forms, with further particulars and conditions of appointment, to be obtained from the Education Officer, County Hall, Wakefield. Last date for applications, 22nd September, 1944.

EXMINSTER HOSPITAL, Devon. Applications are invited from registered medical practitioners, Male and Female, for the following appointment. It is desirable that candidates should be interested in Orthopædic work, as Exminster Hospital is a Fracture A Hospital and has 220 fracture and orthopædic Beds:—

RESIDENT HOUSE SURGEON (B2). The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months, otherwise can be for a period of 1 year.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 3 recent testimonials, should be sent as soon as possible to the Medical Superintendent, Exminster Hospital, Exminster, near Exeter, Devon.

BOTLEYS PARK COLONY, Chertsey, Surrey. Applications are invited by the Surrey County Council from registered medical practitioners of either sex for the post of TEMPORARY JUNIOR ASSISTANT MEDICAL OFFICER (B1). Salary £450–£25–£550 p.a., plus £50 if in possession of a degree or diploma of Psychological Medicine, with full residential emoluments. The commencing salary will be at a point within the scale according to qualifications and experience. R and W practitioners holding B2 appointments, also R practitioners holding B1 and having been rejected for service with H.M. Forces, may also apply.

Applications to the Medical Superintendent.

RUNWELL EMERGENCY HOSPITAL, near Wickford, Essex. (230 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the post of HOUSE SURGEON (A). Salary £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise not exceeding 1 year.

Applications with full particulars to the Medical Superintendent as soon as possible.

ROYAL UNITED HOSPITAL, Bath. Applications are invited from registered medical practitioners for the appointments of HOUSE PHYSICIAN (A) and HOUSE SURGEON (A). Salary for each post £150 p.a., with board, residence, and laundry. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointments will be for a period of 6 months.

Applications at once to—

J. LAWRENCE MEARS, Secretary-Superintendent.

THE WEST RIDING OF YORKSHIRE MENTAL HOSPITALS BOARD. STORTHES HALL MENTAL HOSPITAL, near HUDDERSFIELD. Applications are invited for the appointment of a LOCUM TENENS MEDICAL OFFICER (B1) in the Board's service at the above Mental Hospital. Salary £7 7s. per week, plus board, apartments, and laundry, together with appropriate war bonus at present 9s. 6d. per week. A candidate holding the Diploma in Psychological Medicine or other equivalent qualification will receive an additional £50 p.a. The appointment is for the duration of the war and may, at the discretion of the Committee, be continued after the war. It will be an advantage if candidates have had at least 1 year's experience in general medicine after qualification.

Applications to be forwarded to the Medical Superintendent, Storthes Hall Mental Hospital, Kirkburton, near Huddersfield.

G. L. BANNER, Clerk of the Board.

Board Offices, Wakefield, August, 1944.

ADDENBROOKE'S HOSPITAL, Cambridge. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (B2) to the Ear, Nose, and Throat Department (45 Beds), vacant towards the end of September. The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months, the normal period of appointment.

Applications, together with copies of 3 recent testimonials, should be sent not later than Wednesday, 13th September, 1944, to: J. A. BEARDSALL, Secretary-Superintendent.

MANCHESTER ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the appointment of a full-time MEDICAL NEUROLOGICAL (CHIEF ASSISTANT (B1), non-resident, vacant 1st October. Applicants must have held house appointments and had neurological experience. Preference will be given to candidates holding higher qualifications. Salary at the rate of £450 p.a. Suitably qualified R and W practitioners holding B2 posts, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications, stating age, nationality, qualifications with dates, experience and details of previous appointments, and accompanied by copies of 3 recent testimonials, should be forwarded to the undersigned not later than 16th September, 1944. By Order, F. J. CABLE,

24th August, 1944. General Superintendent and Secretary.

HARLOW WOOD ORTHOPÆDIC HOSPITAL, near Mansfield, NOTTS. (405 Beds, E.M.S. and Civilian, including Rehabilitation Unit.) Regional Orthopædic Centre. Applications are invited from registered medical practitioners, including R and W practitioners who now hold A posts, for the appointment of RESIDENT HOUSE SURGEON (B2). Appointment will be for a period of 6 months at the rate of £200 p.a., with full residential emoluments. D. ROBERTS, Secretary-Superintendent.

ROYAL LIVERPOOL BABIES' HOSPITAL. Required, Resident MEDICAL OFFICER (A) for the above Hospital. Salary at the rate of £125 p.a., with full residential emoluments. R practitioners within 3 months of qualification may apply, when appointment will be for a period of 6 months. Appointment commencing 17th September, 1944.

Applications, with copies of testimonials, to be sent to the Honorary Secretary, 9, Copperas-hill, Liverpool, 3.

BROOKWOOD MENTAL HOSPITAL, Knaphill, Woking, Surrey. Applications are invited from medical practitioners, including R practitioners holding B2 posts, for the post of TEMPORARY ASSISTANT MEDICAL OFFICER (B1). Salary £450, rising to £550 p.a., with full residential emoluments. R practitioners now holding B1 posts and have been rejected by the R.A.M.C. may also apply.

Applications in writing, accompanied by 3 recent testimonials, should be sent immediately to the Medical Superintendent.

23rd August, 1944.

CITY OF PORTSMOUTH. Saint Mary's Hospital. (1200 Beds.) Applications are invited from Male registered practitioners for the appointment of JUNIOR RESIDENT MEDICAL OFFICER (A). The salary is at the rate of £250 p.a., with residential emoluments valued at £150 p.a., and a temporary cost-of-living bonus at present payable at the rate of 9s. 6d. per week. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise for a period of 12 months.

Application forms may be obtained from, and must be returned to, the Medical Officer of Health, Northern Secondary School, Mayfield-road, Portsmouth. FREDERICK SPARKS,

Municipal Offices, Royal Beach Hotel, Southsea, 22nd August, 1944. Town Clerk.

VICTORIA HOSPITAL, Accrington. Applications are invited from medical practitioners (Male) for the appointment of HOUSE SURGEON (B2). The salary is at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months.

Apply, with copies of 2 testimonials, to Hon. Secretary.

CITY OF PLYMOUTH. Medical Officer of Health's Department. Applications are invited for the appointment of PART-TIME CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST to the City (General) Hospital and PART-TIME CONSULTANT FOR DOMICILIARY MIDWIFERY. The successful applicant will also undertake the medical lectures to pupil midwives. Preference will be given to an applicant holding the M.R.C.O.G. or F.R.C.S. The consent of the Minister of Health has been obtained to the making of this appointment. Remuneration will be by annual salary of £200 for the City Hospital in-patient maternity and gynæcological work, and by sessional or case basis fee for other work.

Particulars and conditions of appointment may be obtained on application. Applications, accompanied by copies of 2 recent testimonials, must be sent as soon as possible to—

T. PEIRSON, Medical Officer of Health.

Seven Trees, Lipson-road, Plymouth.

DERBYSHIRE ROYAL INFIRMARY, Derby. (Grade IA Hospital.) (531 Beds, including 115 E.M.S.) Applications are invited from registered medical practitioners holding the Diploma of F.R.C.S. for the appointment of full-time RESIDENT SURGICAL OFFICER. Preference will be given to candidates with considerable hospital experience, and the officer appointed will undertake certain administrative duties in addition to his surgical work. In the event of a candidate being married, arrangements could be made for residence near the Hospital. Salary, if resident, £800 p.a.; non-resident, £1000 p.a.

Apply for further particulars, stating age and experience, to—
ARTHUR TAYLOR, Superintendent and Secretary.

ROYAL WEST SUSSEX HOSPITAL, Chichester. Applications are invited from registered medical practitioners for the appointment of CASUALTY OFFICER AND HOUSE SURGEON (A). Appointment is for 6 months from 10th August, 1944, and includes general surgical, gynæcological, radio-therapy and physiotherapy work. Salary £120 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, qualifications with dates, and nationality, supported by copies of 3 recent testimonials, should be sent to the House Governor and Secretary.

ROTHERHAM HOSPITAL (General Voluntary Hospital —140 Beds.) CASUALTY OFFICER AND ORTHOPÆDIC HOUSE SURGEON (B2), now vacant. Salary £250 to £300 p.a., according to experience, with full residential emoluments. Applications are invited from registered medical practitioners, including R and W practitioners who now hold A posts. To R or W practitioners the appointment will be limited to 6 months.

Applications should be sent at once to—T. H. FLETCHER, Secretary-Superintendent.

BRADFORD ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male, single) for the appointment of HOUSE SURGEON (B2), vacant 1st October. 6 months' appointment. Salary £150 p.a., with full residential emoluments. There are 372 Beds and 8 resident officers. R practitioners who now hold A posts may also apply.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, should be sent immediately to—
H. TRUSSON, House Governor and Secretary.

BRADFORD ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male, single) for the appointment of HOUSE SURGEON (A), vacant 1st October. 6 months' appointment. Salary £150 p.a., with full residential emoluments. There are 372 Beds and 8 resident officers. Practitioners within 3 months of qualification and liable under the National Service Acts may apply.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, should be sent immediately to—
H. TRUSSON, House Governor and Secretary.

THE PRINCE OF WALES'S HOSPITAL, Greenbank-road, PLYMOUTH. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE PHYSICIAN (B2), vacant 1st September. The salary is at the rate of £200 p.a., with full residential emoluments. R and W practitioners holding A posts may also apply, when appointment will be limited to 6 months.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent to the undersigned forthwith.
ARTHUR R. CASH, General Superintendent.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of HOUSE SURGEON to Special Departments and CASUALTY OFFICER (A) for duty at the Greenbank Road Section, vacant forthwith. Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.
ARTHUR R. CASH, General Superintendent.
Head Office: Greenbank-road, Plymouth.

THE PRINCE OF WALES'S HOSPITAL, Plymouth. Applications are invited from registered medical practitioners for the appointment of RESIDENT SURGICAL OFFICER (B1), vacant 29th September. Salary is at the rate of £312 p.a. Applicants should have held house appointments and had surgical experience. Preference will be given to candidates holding diploma of F.R.C.S. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and have been rejected by the R.A.M.C., may apply.
ARTHUR R. CASH, General Superintendent.
24th August, 1944.

HORTON GENERAL HOSPITAL, Banbury. (276 Beds with E.M.S.) Applications are invited from registered medical practitioners (Male or Female) for the following appointments:—

RESIDENT MEDICAL OFFICER (B2), including R and W practitioners who now hold A posts. £180 p.a.

RESIDENT HOUSE SURGEON (A), including practitioners within 3 months of qualification and liable under the National Service Acts. £150 p.a.

Full residential emoluments.

Applications to—
RICHARD H. PRESCOTT, Secretary and House Governor.

DONCASTER ROYAL INFIRMARY. Applications are invited from registered medical practitioners (Male) for an ORTHOPÆDIC HOUSE SURGEON (B2). The appointment will be for 6 months. Salary £175 p.a., with full residential emoluments. This large industrial area offers excellent opportunities for gaining experience. R practitioners holding A posts may also apply.

Applications, accompanied by not more than 3 testimonials, to be sent immediately to—
R. LANCASTER, Secretary-Superintendent.

CITY OF BIRMINGHAM. Yardley Green Road Sanatorium. (335 Beds.) Applications are invited from registered Male medical practitioners for the appointment of TEMPORARY ASSISTANT RESIDENT MEDICAL OFFICER (B1). In addition to his duties at the Sanatorium, the successful candidate will be required to undertake duties at the Anti-Tuberculosis Centre. Candidates should have held a resident hospital appointment and an appointment in some institution recognised for the treatment of tuberculosis. The commencing salary will be at the rate of £450 p.a., rising by £25 to £600 p.a., plus emoluments. Suitably qualified R practitioners holding B2 appointments, also those now holding B1 and have been rejected by the R.A.M.C., may apply.

Applications, stating age, qualifications with dates, experience, and nationality, together with copies of 3 recent testimonials, should be addressed to the Chief Clinical Tuberculosis Officer, 151, Great Charles-street, Birmingham, 3, not later than 15th September, 1944.

CITY OF BIRMINGHAM. Little Bromwich Infectious Disease HOSPITAL. (750 Beds.) Applications are invited from registered medical practitioners, Male and Female, for appointment as JUNIOR MEDICAL OFFICER (A). The salary is at the rate of £300 p.a., plus emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise for 1 year.

Applications, stating age, nationality, experience, and accompanied by copies of 3 recent testimonials, should be sent to the Medical Officer of Health, Public Health Department, Congreve-street, Birmingham, 3, not later than the 15th September, 1944.

ROCHDALE INFIRMARY, Lancs. (110 Beds.) The Board of Management invite applications from registered medical practitioners for the appointment of HOUSE PHYSICIAN (A). Duties include work in the Ophthalmic, Aural, and Gynæcological Departments as well as Medical Clinic. Salary £150, with full residential emoluments. The successful candidate must be a member of a Medical Defence Society. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to: W. WYNNE, Superintendent and Secretary.

ROCHDALE INFIRMARY, Lancs. (110 Beds.) The Board of Management invites applications from registered medical practitioners for the appointment of SECOND HOUSE SURGEON (A). Salary £150, with full residential emoluments. The successful candidate must be a member of a Medical Defence Society. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to: W. WYNNE, Superintendent and Secretary.

NORTHUMBERLAND COUNTY COUNCIL. Hexham Emer-GENCY HOSPITAL. (Regional Orthopædic Centre—640 Beds.) HOUSE SURGEONS (A). Applications for the above posts are invited from registered medical practitioners, Male or Female. Salary is at the rate of £120 p.a., with full residential emoluments. The Hospital offers excellent training and experience in orthopædic surgery. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise for a period of 1 year.

Applications should be sent immediately to—
J. B. TILLEY, County Medical Officer.
County Hall, Newcastle-upon-Tyne, 1.

NOBLE'S ISLE OF MAN HOSPITAL, Douglas, Isle of Man. (137 Beds.) Applications are invited from Male or Female registered medical practitioners for the appointment of SECOND HOUSE SURGEON (A). Salary is at the rate of £175 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise for a period of 12 months.

Applications, with copies of 2 recent testimonials, should reach the undersigned as soon as possible.
Douglas, 26th August, 1944. E. K. KELLY, Secretary.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL. (255 Beds.) Applications are invited from registered medical practitioners, Male and Female, including practitioners within 3 months of qualification and liable under the National Service Acts, for the appointment of CASUALTY OFFICER (A). The appointment will be for a period of 6 months. Salary is at the rate of £175 p.a., with full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 3 recent testimonials, should be sent immediately to—
EDWARD L. WIRGMAN, House Governor and Secretary.

THE LLANELLY AND DISTRICT MEDICAL SERVICE propose to appoint shortly a CONSULTING PHYSICIAN (temporary war-time appointment) at a commencing salary of £1000 p.a., plus a war increase of £50 p.a. The post—which permits of limited private consulting practice—is open to registered medical practitioners possessing a higher degree in medicine, and experience in biochemistry and laboratory technique is desirable. Closing date for applications 30th September, 1944.
W. THOMAS, Secretary-Accountant.
Llanelly and District Medical Service, 28, Coleshill-terrace, Llanelly, Carm.

THE LUTON CHILDREN'S HOSPITAL, London-road, Luton. Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT HOUSE SURGEON (B2), vacant 2nd October. The salary is at the rate of £200 p.a., with full residential emoluments. R practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise may be renewed for a period of a further 6 months.

Applications to be received not later than 15th September, 1944. BART MILNER, House Governor.

DERBYSHIRE EDUCATION COMMITTEE. Temporary Assistant SCHOOL MEDICAL OFFICER (Male or Female). Applications are invited for the above appointment at a salary of £600 p.a., rising by annual increments of £25 to £700, plus a war bonus, with a travelling allowance in accordance with the County scale, which at present is as follows: cars of 8 h.p. and under, £70 p.a., plus 2d. per mile; cars of 9 h.p. and over, £75 p.a., plus 2½d. per mile. Candidates must be registered medical practitioners of at least 3 years' standing. The duties will include work under the maternity and child welfare service, and experience in this work and in mental deficiency is desirable. The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination. The officer appointed will not be allowed to engage in private or consulting practice, but will be required to devote his (or her) whole time to the duties of the office and will act under the direction of the County School Medical Officer. The appointment will be terminable by 3 months' notice on either side.

Application forms may be obtained from, and should be returned to, the County School Medical Officer, County Offices, St. Mary's Gate, Derby, on or before 16th September, 1944.

EAST SUSSEX COUNTY COUNCIL, Southlands Hospital, SHOREHAM-BY-SEA. Applications are invited from fully qualified Male or Female registered medical practitioners (unmarried) for the post of TEMPORARY RESIDENT ASSISTANT MEDICAL OFFICER (B1) at Southlands Hospital, Shoreham-by-Sea, near Brighton. Salary £400 p.a., with emoluments valued at £90 p.a. Candidates must have had previous hospital experience. The hospital (519 beds) is a general hospital, under the administration of the East Sussex County Council and graded 1A in the Emergency Medical Service Scheme. The duties of the post will be mainly concerned with surgical cases, the administration of anæsthetics, and receiving-ward duties. The post is likely to become vacant early in October. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners now holding B1 and rejected by the R.A.M.C., may apply.

Applications should be made on a form obtainable from the County Medical Officer of Health, County Hall, Lewes, and must be returned to him by 16th September, 1944, together with copies of three recent testimonials.

H. S. MARTIN, Clerk of the County Council.

County Hall, Lewes, 21st August, 1944.

CITY OF MANCHESTER. Monsall Hospital for Infectious Diseases. (600 Beds.) Applications are invited from registered medical practitioners, Male or Female, for the appointment of JUNIOR RESIDENT ASSISTANT MEDICAL OFFICER (A), vacant at end of September, 1944. The duties of the post are mainly medical. The basic salary for the appointment is £250 p.a., with board, residence, and laundry in addition, subject to the Manchester Corporation conditions of service. A temporary cost-of-living wages addition is payable in addition to the salary stated. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when the appointment will be for a period of 6 months; otherwise will be for a period of 12 months.

Applications, stating the full name, age (giving date of birth), nationality, professional qualifications (with dates), particulars of present appointment and past hospital appointments, are to be addressed to the Medical Superintendent, Monsall Hospital, Newton Heath, Manchester, 10, and must be received by him not later than 8th September, 1944. Canvassing in any form is prohibited. R. H. ADCOCK, Town Clerk.

Town Hall, Manchester, 16th August, 1944.

NORTH STAFFORDSHIRE ROYAL INFIRMARY, Stoke-on-TRENT. (660 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the following appointments:—

RESIDENT ANÆSTHETIST (B2).

HOUSE SURGEON (B2) to the Ear, Nose, and Throat Department.

HOUSE SURGEON (A).

For the B2 posts R and W practitioners who now hold A posts may apply. For the A post practitioners within 3 months of qualification and liable under the National Service Acts may apply. The posts offer exceptional experience. Salary in each case is at the rate of £185 p.a., with full residential emoluments. Appointments will be for a period of 6 months.

Applications as soon as possible to the House Governor.

THE ROYAL INFIRMARY OF EDINBURGH. Applications are invited from registered medical practitioners, Male and Female, for the following posts, vacant on 1st October:—

1. CLINICAL TUTOR (B1), in Surgical Out-patient Department combined with RESIDENT HOUSE SURGEONSHIP at Beechmount Auxiliary Hospital. Salary £252 p.a., with board, lodging, and laundry allowance.

2. CLINICAL TUTOR (B1), in Surgical Out-patient Department combined with RESIDENT HOUSE SURGEONSHIP at Corstorphine Auxiliary Hospital. Salary £252 p.a., with board, lodging, and laundry allowance.

Suitably qualified R and W practitioners holding B2 posts, also R and W practitioners holding B1 appointments and rejected for the R.A.M.C., are invited to apply, subject to the approval of the Scottish Central Medical War Committee.

Applications to be sent to: The Superintendent, Royal Infirmary, Edinburgh.

LLANELLY AND DISTRICT GENERAL HOSPITAL, 100, Marble Hall-road, LLANELLY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), vacant 31st August, 1944. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to be addressed to the Secretary-Superintendent.

VICTORIA HOSPITAL, Burnley. (169 Beds.) Applications are invited from registered medical practitioners (Male or Female) for the appointment of 2 HOUSE SURGEONS (A) and 1 HOUSE PHYSICIAN (A). Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, with copies of recent testimonials, should be sent immediately to: J. E. WHEATCROFT, Secretary.

BURY INFIRMARY, Lancs. (159 Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of CASUALTY AND SPECIALS HOUSE SURGEON (A), now vacant. Salary is at the rate of £150 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for 6 months; otherwise renewable.

Applications, giving full particulars, immediately to—

H. WILKINSON, Superintendent.

THE STAMFORD, RUTLAND AND GENERAL INFIRMARY. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A), now vacant. Salary is at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications, stating age, qualifications with dates, nationality, and accompanied by copies of 3 recent testimonials, should be sent immediately to the Secretary, H. F. DONALD, The Infirmary, Stamford.

COUNTY COUNCIL OF ESSEX AND URBAN DISTRICT COUNCIL OF THURROCK. COMBINED MEDICAL SERVICE. Applications are invited from duly qualified medical practitioners, possessing the Diploma in Public Health and having special experience in obstetrics, for the vacant joint appointment of TEMPORARY ASSISTANT COUNTY MEDICAL OFFICER AND TEMPORARY ASSISTANT MEDICAL OFFICER OF HEALTH. The salary attaching to the appointment will be at the rate of £500 a year, together with war bonus, rising, subject to satisfactory service, by annual increments of £25 to £700 a year, but the commencing salary may be varied having regard to experience and capabilities.

Forms of application may be obtained from the Clerk of the County Council, to whom they should be returned completed, accompanied by copies of 3 recent testimonials, not later than 7th September, 1944. Canvassing, whether directly or indirectly, is forbidden.

JOHN E. LIGHTBURN,
Clerk of the County Council.

A. E. POOLE,
Clerk to the Urban District Council of Thurrock.

County Hall, Chelmsford, 14th August, 1944.

GENERAL HOSPITAL, Nottingham. Ear, Nose, and Throat Department (40 Beds) and large Out-patient Department. Applications are invited from registered medical practitioners, Male and Female, for the appointment of HOUSE SURGEON (A) for the above Department. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

Applications to be addressed to the undersigned, stating age, qualifications, experience, &c., together with copies of testimonials.

HENRY M. STANLEY,
16th August, 1944. House Governor and Secretary.

GENERAL HOSPITAL, Nottingham. (712 Beds, including E.M.S. Beds.) Applications are invited from registered medical practitioners (Male and Female) for the appointment of RESIDENT CASUALTY OFFICER (A) for the above Hospital. Duties to commence immediately. Salary at the rate of £200 p.a., with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months.

HENRY M. STANLEY, House Governor and Secretary.

CORPORATION OF GLASGOW. Applications are invited from qualified medical practitioners for the appointment of RESIDENT MEDICAL OFFICER (B2) at Shieldhall Fever Hospital, Glasgow, S.W.1. Salary at the rate of £250 p.a., plus war bonus and full residential emoluments. R and W practitioners holding A posts, and who must first obtain the sanction of the Scottish Central Medical War Committee, may also apply, when appointment will be limited to 6 months; otherwise not exceeding 12 months.

Applications, stating age, qualifications with dates, and present post (if any), accompanied by copies of 3 recent testimonials, should be addressed forthwith to the Medical Officer of Health, 23, Montrose-street, Glasgow.

GLASGOW ROYAL INFIRMARY. Applications are invited from registered medical practitioners for the post of ASSISTANT RADIOLOGIST (B1) (Full-time). Salary according to experience, with minimum of £500 p.a. Suitably qualified R and W practitioners applying for the post should first obtain permission from the Scottish Central Medical War Committee.

Full particulars may be obtained from the Superintendent, Glasgow Royal Infirmary, 84, Castle-street, Glasgow, C.4.

Applications, stating age, qualifications, and experience, with 3 names for reference, should be sent to: R. MORRISON SMITH, C.A., F.H.A., Secretary and Cashier, Glasgow Royal Infirmary, 135, Buchanan-street, Glasgow, C.1. No canvassing.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) Casualty OFFICER (B2) required to commence as soon as possible. R and W practitioners who now hold A posts may apply, when appointment will be limited to 6 months. Salary at the rate of £200 p.a., with full residential emoluments.

Applications should be sent as soon as possible to—

H. J. JOHNSON, General Superintendent and Secretary.

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THE SHEFFIELD RADIUM CENTRE, THE NOTTINGHAM RADIUM CENTRE AND THE NOTTINGHAMSHIRE COUNCIL OF THE BRITISH EMPIRE CANCER CAMPAIGN. **Applications are invited for the post of** RADIOTHERAPIST **to the Nottingham Radium Centre at the General Hospital, Nottingham. Salary according to qualifications and experience, but will not be less than £1200 p.a., with participation in a superannuation scheme. The successful candidate will carry out his work in consultation, and, when necessary, with the assistance of the Medical Director of the Sheffield Radium Centre; he will be appointed an Assistant Medical Director of that National Centre.**

Applications should be received by the undersigned immediately, from whom full details concerning the post can be obtained.

HENRY M. STANLEY, House Governor and Secretary.
The General Hospital, Nottingham.

CITY OF LIVERPOOL. Smithdown Road Hospital, Liverpool, 15. (1022 Beds.) Applications are invited from registered medical practitioners, Male and Female, for the appointment of RESIDENT ASSISTANT MEDICAL OFFICER (B2). The salary is at the rate of £200 p.a., with full residential emoluments. All fees received in connexion with the appointment to be handed over to the City Council. The appointment will be made in accordance with the Standing Orders of the City Council. R and W practitioners who now hold A posts may apply, when the appointment will be limited to 6 months; otherwise a period of 12 months.

Applications, stating whether R or W practitioner, age, nationality, qualifications with dates, experience and details of previous appointments, and accompanied by copies of 3 recent testimonials, should be endorsed "Resident Medical Officer" and sent forthwith to: W. H. BAINES, Town Clerk.
Municipal Buildings, Dale-street, Liverpool, 2,
25th August, 1944.

KEIGHLEY AND DISTRICT VICTORIA HOSPITAL, Yorkshire (WEST RIDING). (146 Beds—2 Residents.) Applications are invited from registered medical practitioners, Male and Female, for the following posts:—

FIRST RESIDENT MEDICAL OFFICER (B2), now vacant. Salary £180, with full residential emoluments. R and W practitioners holding A posts may apply, when appointment will be limited to 6 months; otherwise 6 months renewable.

SECOND RESIDENT MEDICAL OFFICER (A), vacant 1st October, 1944. Salary £160, with full residential emoluments. Practitioners within 3 months of qualification and liable under the National Service Acts may apply, when appointment will be for a period of 6 months; otherwise 6 months renewable.

Salaries of £200 and £180 respectively if renewed.

Applications to be sent as soon as possible to—
J. YOUNG, Secretary-Superintendent.

EBBW VALE GENERAL HOSPITAL, Ebbw Vale, Mon. Applications are invited from registered medical Men for the appointment of SURGEON IN CHARGE of the above Hospital. Applicants should be graduates in medicine of one of the universities of the United Kingdom and a Fellow of one of the Royal Colleges of Surgeons. Duties to commence 15th November, 1944. The salary will be not less than £1250 p.a., plus house, coal, and light. Consulting practice is allowed provided it does not interfere with hospital duties. Candidates should be ineligible for military service.

Applications to be addressed to the Secretary, Ebbw Vale General Hospital, and sent in as soon as possible.

BRISTOL ROYAL HOSPITAL (incorporating the Bristol Royal INFIRMARY AND BRISTOL GENERAL HOSPITAL). Applications are invited from registered medical practitioners for the appointment of RESIDENT ANÆSTHETIST (B1). Part of the time to be spent at the Bristol Royal Infirmary and part at the University of Bristol Dental Hospital. Salary at the rate of £250 p.a., with full board-residence. Preference will be given to candidates holding the D.A. Suitably qualified R and W practitioners holding B2 appointments, also R practitioners holding B1 and rejected by the R.A.M.C., may apply.

Applications to be made on forms to be obtained from—
ELLIS C. SMITH, F.C.I.S., Secretary and House Governor.
Bristol Royal Infirmary.

EAST SUFFOLK AND IPSWICH HOSPITAL. (400 Beds—7 Residents.) Applications are invited from registered medical practitioners, including R practitioners who now hold A posts, for the immediate appointment of HOUSE SURGEON (B2) to the Senior Surgeon. Appointment will be for 6 months. Salary is at the rate of £175 p.a., with full residential emoluments.

ARTHUR GRIFFITHS, Secretary.
The Hospital, Ipswich, 2nd September, 1944.

SURREY COUNTY COUNCIL. Kingston County Hospital, Wolverton-avenue, KINGSTON-UPON-THAMES. Applications are invited from registered medical practitioners for the appointment of RESIDENT ASSISTANT MEDICAL OFFICER (B1) E.M.S. for general medical duties at the above Hospital. Salary at the rate of £350 p.a. The appointment is available for the further duration of the war and is subject to 1 month's notice on either side. Suitably qualified R and W practitioners holding B2 appointments, also those now holding B1 and have been rejected by the R.A.M.C., may apply.

Apply to the Medical Superintendent by the 13th September, 1944.

ST. BARTHOLOMEW'S HOSPITAL, Rochester. (201 Beds.) Applications are invited from registered medical practitioners, Male, for the appointment of CASUALTY OFFICER (A), now vacant. The appointment is for 6 months and the salary is at the rate of £150 p.a., with additional war-time distribution of approximately £50 p.a. and full residential emoluments. Practitioners within 3 months of qualification who are liable for National Service may apply.

Applications, stating full particulars, together with copies of recent testimonials, to be forwarded as soon as possible.

T. RHODES, Superintendent-Secretary.

BARBADOS GENERAL HOSPITAL. Wanted:—

(1) HOUSE SURGEON AND ANÆSTHETIST. Salary £600 p.a. Experience in modern methods of anæsthesia essential.
(2) HOUSE SURGEON. Salary £450. Preference given to candidates who have had experience in administering anæsthetics.

In each case quarters fully furnished for a single man, free water, and lighting allowance are provided. No local rates.

The appointments, which are renewable, will be for either 3, 2, or 1½ years, subject to 3 months' notice on either side to terminate the engagement. Candidates should state whether they wish to engage for 3, 2, or 1½ years.

Transport direct to Barbados will be paid, a proportionate part to be refunded if the term of service for which the candidate is engaged be not completed. Return transport paid on satisfactory completion of contract.

Applications, stating age and date of graduation, accompanied by a recent photograph, a medical certificate of fitness at the time of application, and recent professional and personal testimonials, should be sent by air mail to the Medical Superintendent, General Hospital, Barbados, B.W.I., from whom further particulars may be obtained.

Applicants for post of House Surgeon and Anæsthetist should also forward a recent certificate of proficiency in administering anæsthetics as Resident Anæsthetist of a hospital of not less than 200 Beds, or of a post-graduate course on Modern Anæsthesia at a recognised medical school.

Canadian graduates must hold qualifications registrable in England.

Candidates holding a United States degree must be registered in the State of New York. W. GOODMAN, Secretary.

Post-graduate Instruction for Demobilised Medical Officers. Applications are invited for the post of whole-time SECRETARY of a Committee appointed by the Council of the Senate of Cambridge University to arrange for the provision of post-graduate instruction in the Eastern Counties for medical officers released from His Majesty's Forces. Applicants should be graduates in medicine. The salary of the post will not exceed £1000 a year, non-pensionable, with an allowance for travelling expenses. The appointment will be temporary, and will be for 1 year in the first instance.

Applications should be sent, before 2nd October, 1944, to the Registrary, University Registry, Cambridge.

Wanted, Junior Assistant (whole time) in Clinical Pathology. Hospital and private pathological practice with opportunity for clinical experience and research. Commencing salary £500, with yearly increments to £750.

Apply, giving experience and references, The Secretary, Yorkshire Clinical Laboratories, 6, Victoria-avenue, Harrogate.

Doctors, Male and Female, required for Locums and Assistantships. Vacancies for Hospital Locums and Ships' Surgeons. Practices and Partnerships for disposal.—Write: A. SHAW, Medical Transfer Agent, Premier Buildings, 88, Church-street, Liverpool.

Opportunity for young Physician with up-to-date knowledge and journalistic ability to write descriptive literature for manufacturers of pharmaceutical preparations of the highest ethical standards, and to act in advisory capacity. Retaining fee based on firm's turnover.—Write, giving qualifications, to: Address, No. 474, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

English M.R.C.S. available Locum General Practice or Hospital appointment. Exempt Army. Car driver.—Address, No. 451, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Psychiatrist, British, exempt, with considerable experience of all forms of modern therapy and hospital administration, seeks change, for personal reasons, as Deputy Medical Superintendent or Senior Medical Officer.—Address, No. 470, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Secretary-Typist, 44, cultured, seeks part-time employment.—ACTON, 38, Evelyn-road, Cockfosters.

Psychological supervision during convalescence. A maximum of 6 patients can be accommodated in physician's home with 10 acres of ground extending to Thames bank. 10 guineas weekly. —Apply Secretary, Weir Cottage, Chertsey. Tel. 2135.

Death Vacancy. For Sale, large old-established Panel and Private Practice in rural area in the County of Caernarvon, North Wales. Good house and garden also for sale. Knowledge of Welsh desirable. (Panel 750.) Good mileage grants.—Particulars from ELLIS DAVIES & Co., Solicitors, Caernarvon.

For Sale, 2 Microscopes, 1 Hanovia Lamp, 1 Infra-red, Galvain Battery.—Address, No. 473, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

For Sale, Watson "Service" Microscope, new and unused, purchased May, 1939. Rack-focusing underfitting with Abbé illuminator; triple nosepiece; ⅔ and ⅙ objectives; Nos. 2 and 4 eyepieces. Mahogany case. Price £35.—Phone: Northwood 2429 after 1 PM.

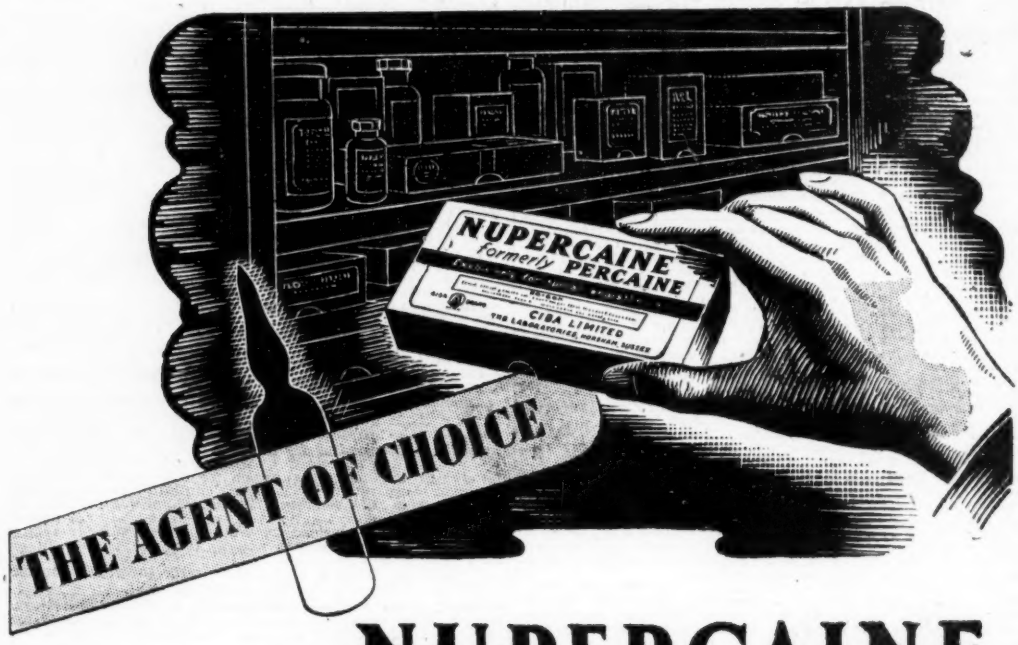
Microscopes wanted for essential work and war factories; high prices offered. Also Leicas and similar Cameras and "Talkies." Prompt cash.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Radium: You can hire up to 100 mgms. of radium element made up to any required specification, for the moderate fee of £5 5s., from: J. C. GILBERT, LTD., Columbia House, Aldwych, W.C.2. Tel.: Chancery 6060.

THE NATIONAL MEDICAL AGENCY.

Medical Practice wanted, St. Anne's-on-Sea or Preston districts preferred—not essential.

Full details from the NATIONAL MEDICAL AGENCY, 63, Great George-street, Leeds, 1.



NUPERCAINE

A BRITISH PRODUCT

formerly known as PERCAINE

HEAVY SPINAL ANAESTHETIC SOLUTION

1:200 in 6% Glucose.

THERE ARE NOW OVER 2,000 INDEPENDENT REFERENCES PUBLISHED ON THE USES AND PROPERTIES OF NUPERCAINE.

The Nupercaine Handbook, Part I, Ciba Handbook No. 2 (2nd edition), a 31-page survey of the special advantages of Nupercaine in Spinal Anæsthesia, will be sent on request to members of the Medical Profession.

Describing the filigree operation for hernia, the author of a recent paper states that it is a rule seldom departed from that no other form of anæsthetic than spinal is used.

"Recently nupercaine (1-200 in 6 per cent. glucose, i.e., the hyperbaric solution) has been more frequently used, and I now believe it to be the agent of choice.

"*Nupercaine* is now used because:—

1. The analgesia lasts at least twice as long . . . and the need for supplementary anæsthesia in robust patients is entirely avoided.
2. More accurate control of the level of anæsthesia is obtained."

Brit. J. Surg., 1941, 29, 168.

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